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COMPUTERWORLD

Inside

COMDEX

Comdex/Spring '93 and its sibling, **Windows World**, teemed with activity last week, much of it focused on the operating system wars. Coverage starts on *page 6*.

GLOBAL NETWORKING

AT&T makes history by opening the way to consistent business network services across sometimes rocky foreign terrain. **MCI**, meanwhile, signs up local carriers to give users more choices in the dedicated-access portion of their long-distance contracts. *Page 2*

RAID SYSTEMS

Storage Tek's window of opportunity for its still-unshipped Iceberg RAID storage system closed further last week as rival **HDS** unveiled a 90G-byte alternative. *Page 4*

UP NEXT

In an admitted last-ditch effort to pump some life into the NextStep market, **Next** Chairman Steve Jobs introduced 486 software designed to extend his firm's reach. *Page 20*

OS duel shifts to emphasis on critical apps

Users starting to cement plans for platform features

By Christopher Lindquist
ATLANTA

■ With many leading-edge users seemingly settled on their future desktops, Microsoft Corp. and IBM are waiting to see which operating system can rack up the most mission-critical applications faster: Windows NT or OS/2.

At last week's announcement of Windows NT at Windows World, Microsoft Chairman Bill Gates used several bleeding-edge customers, including JC Penney Co. and National Westminster Bank, to showcase sophisticated applications already ported to the Windows NT platform.

In his keynote, James A. Cannavino, senior vice president of Personal Systems at IBM, pounded on Microsoft's alleged weakness in information systems shops, pointing out that no two customer shops are the same.

"For client/server to function as a system, it has to be man-

OS duel, *page 12*

IBM sets PS/2 update

Lower cost, high-end models to follow 'Green PC,' notebooks

By Michael Fitzgerald
SOMERS, N.Y.

As IBM puts the final touches on two new notebooks and its first "Green PC," it is also preparing for a major refresh of its premium Personal System/2 line and the U.S. debut of its Ambra clone line later this summer, sources close to the company said.

On June 15, IBM is expected to showcase the ThinkPad 500 subnotebook and the ThinkPad 350, its first true notebook. Its Green PC, initially to be called the Personal System/Energy Workstation, will be almost identical to a product IBM displayed at Comdex/Fall '92 [CW, Nov. 24, 1992].

IBM is expected to follow these announcements with a much-needed new line of lower cost PS/2s, sources said. While these machines are expected to be Pentium-capable, IBM initially will base the high-end PS/2 Model 105 on its Blue Lightning chip, which runs at 33 MHz externally and 99 MHz internally. IBM will use its 25/50-MHz 486SLC2 as the base desktop processor in the new line.

"They desperately need to update the PS/2 line, which has become antiquated," said John Dunkle, president of WorkGroup Technologies, Inc., a market research firm in Hampton, N.H.

The new PS/2s are expected to include a variety of fresh twists for IBM, including a choice of on-motherboard Token Ring or Ethernet; MWave, a multimedia digital signal processor developed with Texas Instruments, Inc.; higher speed versions of the Micro Channel Architecture and Extended Graphics Array; and the new modular SurePath BIOS co-developed by IBM and Phoenix Technologies Ltd.

Personal Computer Memory Card International Association drives will be an option, and CD-ROM drives will come standard on high-end models.

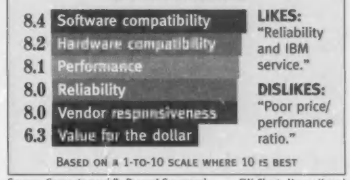
IBM is said to be mulling over how to price the new PS/2s to keep its major corporate accounts from jumping to the ValuePoint line

IBM, *page 8*

Low score

IBM's PS/2 received low ratings in value for the dollar in a recent survey. But new plans will address price and performance issues.

RESPONSE BASE: 30 USERS



BASED ON A 1-TO-10 SCALE WHERE 10 IS BEST

Source: *Computerworld*'s Buyers' Scorecard CW Chart: Nancy Kowal

Pen initiatives seek to ignite sluggish market

By Michael Fitzgerald and Lynda Radosevich
ATLANTA

Seeing the handwriting on the wall, pen computing vendors are actively exploring ways to jump-start adoption of the technology, which thus far has underwhelmed most observers.

A multicompany consortium last week revealed a specification, called Jot, that enables applications to share handwritten notes, sketches and other pen-generated data among a variety of platforms, including non-pen systems [CW, May 24]. Such communications were not previously possible.

The group is led by Slate Corp., Lotus Development Corp. and Microsoft Corp.

Pen initiatives, *page 14*

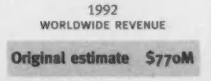
On second look

The majority of IS managers said vendors have done only a fair job communicating the business benefits of pen-based computing . . .

PERCENT OF RESPONDENTS
BASE: 287

. . . which is one reason some analysts have revised their once-optimistic revenue estimates.

1992
WORLDWIDE REVENUE



Source: IDG Research Services, Framingham, Mass., and Dataquest, Inc., San Jose, Calif.

Bank grabs exec to push client/server

By Nell Margolis
NEW YORK

Bankers Trust Co. has lured Aetna Life & Casualty Co. Chief Technology Officer Lyle Anderson to help shape and sharpen the bank's already strong client/server thrust.

Three days into his new job as a vice president at Bankers Trust's Technology Strategic Planning Division, Anderson last week described his initial agenda as "coordinating the use of the bank's many PCs and LANs to better serve our strong commitment to client/server." Anderson will have worldwide, cross-business responsibility, said managing director Michael Packer, to whom Anderson reports. The details of this responsibility are currently being hammered out, Packer added.

Industry observers widely credit Aetna with being in the vanguard when it comes to using information technology as a business enabler. As technology chief at Aetna, Anderson earned his stripes helping to roll out complex projects in a large, decentralized financial institution setting. "Lyle's ex-

Bank, *page 16*

BANKERS TRUST
by the numbers

IS staff
1,300

Total IS budget
$435M

IS staff spending
$115M (includes salary, benefits, travel)

Number of PCs
8,000 PCs on several hundred LANs

Source: 1992 *Computerworld Premier 100*

Newspaper
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Robert McClarin

WINDOWS WORLD

As NetWare users grumble about an April beta test for Windows NT, **Lithonia Lighting** steps back from OS/2 2.0 to Version 1.3, pointing to system glitches between 2.0 and LAN Server 3.0. *Page 12.* And as **Microsoft** developers toil on NT's next generation *(page 10)*, beta-test users of NT and OS/2 2.1 talk about their deployment plans. *Page 1.* Also, NT's impact on DEC's Alpha PC plans stirs debate. *Page 8*

COMDEX/SPRING '93

Comdex focuses on standards: PC Cards — credit-card-size solid-state devices — could become as interchangeable as floppy disks soon, thanks to recent standards. *Page 6.* A consortium of vendors agrees on a standard for sharing handwritten electronic notes among various pen and non-pen systems. *Page 1.* Seeking standards, users express concern about implementing Windows-based mail and mail-enabled applications. *Page 14.* **IBM** will launch a new notebook, the Green PC, with PS/2s and Ambra PCs due later in the year. *Page 1*

CLIENT/SERVER

Bankers Trust snags a former **Aetna** IS exec in an effort to bolster its client/server thrust. *Page 1.* **Mellon Bank** teams with **HP** and **Oracle** on a client/server bank information system. *Page 4.* Two of the nation's largest futures exchanges embark on a three-year effort to develop distributed applications for their trading-floor and back-office system. *Page 61*

DATABASES

IS managers learn that they must balance the value of hosting a jumbo database against the personnel and resource costs associated with managing it. *Page 57*

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BEST COMPUTER NEWSPAPER 1992
COMPUTER PRESS ASSOCIATION

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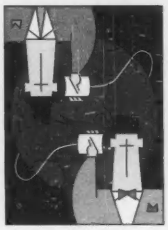
AT&T eyes global telecom focus

Taps partners to provide common features and services

By Joanie M. Wexler
WASHINGTON, D.C.

AT&T last week broke fertile ground in a bid to give multinational companies consistent worldwide network service currently unavailable from a global smattering of disjointed telecommunications providers.

The networking giant said it has begun forming partnerships with the world's public telecommunications carriers to jointly develop network services that span the globe with common features and performance standards. The initial services include virtual private networks, private lines and frame relay.



Users and analysts said the move is a coup for large companies and a turning point for the telecommunications industry. The AT&T offering that will result from the partnerships — dubbed "WorldSource" — will allow global firms to go to one source for a cohesive set of dialing plans and services. Firms will also gain cross-country billing in the country, language and currency of their choice.

"We don't want to see different standards and interfaces across the globe," said Andy Sokolov, senior vice president of telecommunications and computer operations at PaineWebber, Inc., a WorldSource test site.

Bob Benmosche, a PaineWebber executive vice president, added: "It is clear now that, with a managed focus, we'll begin to expand our global exposure and operate in a lot more countries."

Previously, long-distance carriers such as AT&T have taken on the Postal Telephone and Telegraph (PTT) administration negotiation headaches for customers in attempts to provide quasi-one-stop shopping. However, the U.S.-based carriers had little control over service availability or quality and no way to consolidate billing.

"The big difference here is that AT&T is partnering with the PTTs for the services I need, instead of just championing my cause," said Michael Radcliff, vice president of corporate information systems at Honeywell, Inc. in Minneapolis. Honeywell also intends to participate in the WorldSource pilot.

Currently, Radcliff said, network services abroad either "aren't available where we need them, they are not affordable or the quality is not up to par."

One user said he anticipates an eventual reduction in global telecommunications costs. John Faccibene, vice president of telecommunications at brokerage firm Garban Ltd., said, "Now it costs twice as much to call from a foreign country into the U.S. [than the other way around]. I'm bound to pay less with one virtual global connection."

Daniel Briere, president of consultancy TeleChoice, Inc. in Verona, N.J., said WorldSource is "probably the most significant [telecommunications] event that will happen for big companies this year. People are running applications here that they can't use in other countries" without the proper network support.

Fruits of the first two AT&T alliances — with Japan's Kokusai Denshin Denwa Co. and Singapore Telecom — will be available in North America and the Asia/Pacific region later this year. PTT partnerships are slated to expand to Europe early next year.

MCI guards 'last mile'

Keeping with the current "partnership" theme in the telecommunications industry, MCI Communications Corp. last week linked arms with 22 local network service providers — including two cable TV firms — to offer customers a choice of carriers for providing redundancy in the "last mile" of their networks.

MCI introduced Custom Access, a service that makes MCI responsible for uptime in the local-access portion of its customers' corporate networks. The service will let users buy dedicated local-access services from any mix of carriers providing access into their building, rather than having to negotiate with multiple vendors, MCI said.

This could be initially useful to those companies in metropolitan areas already enjoying competition in the local loop, said Mike Kilbane, senior adviser to the International Communications Association user group. "For a carrier to go out and do the legwork to uncover the alternative access options into your building is commendable," he said.

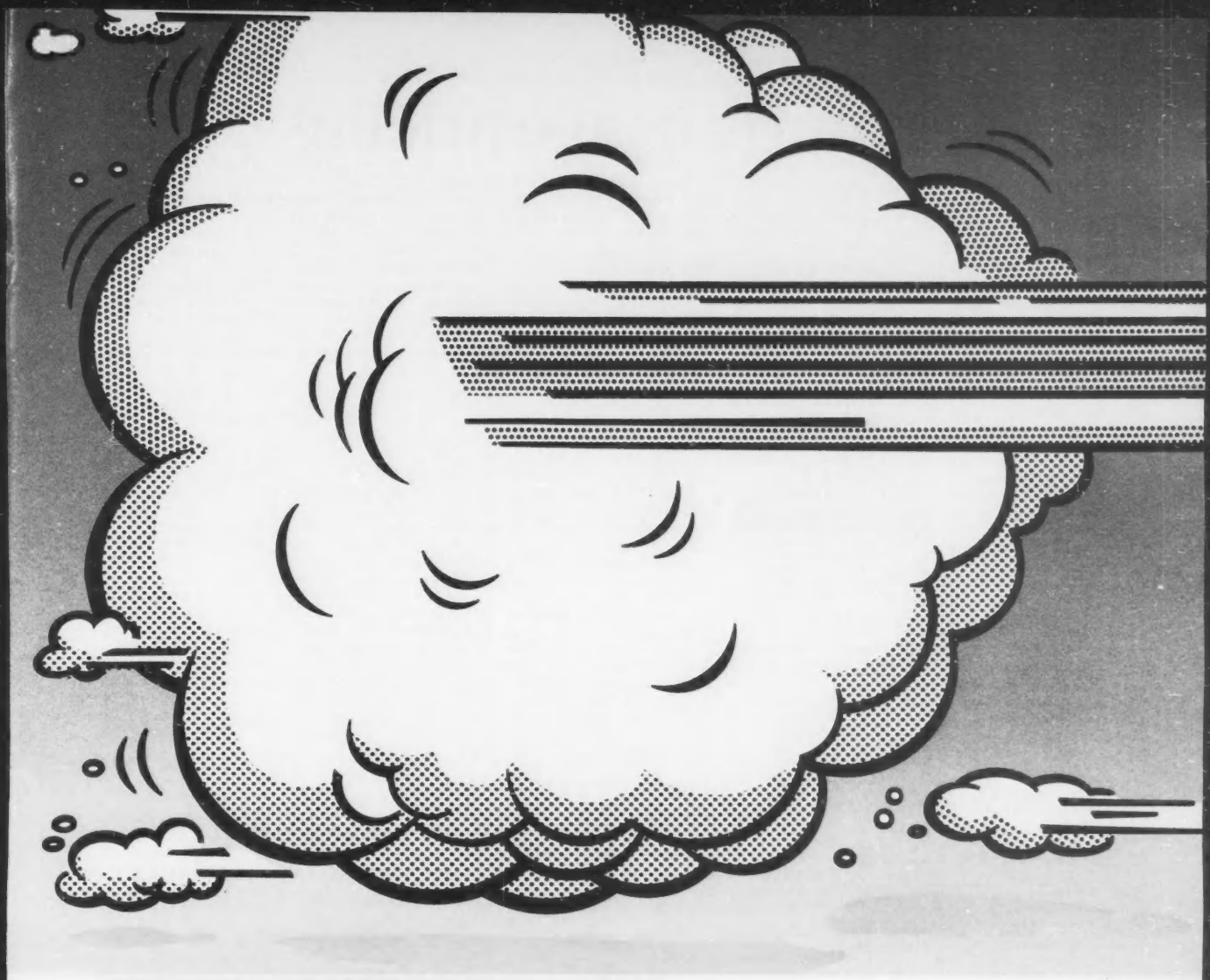
The MCI service comes with a guarantee that covers about 1,200 buildings in the U.S. If a dedicated access line fails for more than one minute, MCI said it will refund one month's circuit charges to the customer.

Traditionally, customers have left it up to their long-distance carrier to choose a local provider, and usually the carrier has gone to the regulated phone company, said Ken McGee, a vice president at research firm Gartner Group, Inc. in Stamford, Conn. But "when customers don't properly negotiate the access portion of their contracts, they're leaving money on the table," he said.

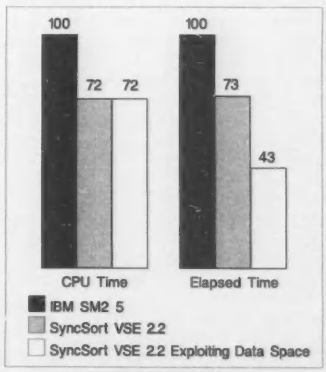
—Joanie M. Wexler

Corrections

- A chart in the May 24 issue incorrectly noted the recommended and minimum memory requirements for OS/2 2.1. The actual numbers should be 4M bytes minimum and 6M bytes recommended.
- An item in the May 17 issue misidentified the division of IBM working with Emass Storage System Solutions to hook up the RISC System/6000 with Emass' data-storage systems. The correct IBM division is Technology Consulting and Services in Dallas.



HERE'S WHERE WE LEAVE THE COMPETITION.



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Legent unfurls usage pricing

License server will capture billing

By Gary H. Anthes

Responding to customer demands for increased simplicity, fairness and flexibility, Legent Corp. is developing usage-based pricing options for its systems management software products.

Within a year, the company will be able to bill customers based on their actual product use, as determined by statistics captured by a "license server," according to Legent executives.

The announcement comes in the wake of IBM's recent move to experiment with usage-based, or metered, pricing [CW, May 24]. Legent said it has been working on the concept for some time and is not among the firms working with IBM to flesh out the idea.

Legent stopped short of saying which products might offer the option, how "usage" would be defined or how the approach might be administered. However, the company said it will likely build its license server — which could take feeds from any Legent product — using license management software from either Highland Software in Palo Alto, Calif., or Gradient Technologies, Inc. in Marlboro, Mass.

"We will roll out [the license server] with new products phased in over the next 18 months," said Robert Yellin, chief technology officer at the Vienna, Va.-based systems management software firm.

Priced to use

Software vendors are weighing pricing and billing on a variety of usage measures

BY USE METRICS

- Per log-on
- Per transaction
- Per job submission
- Per use/time period

BY USER METRICS

- Number of users connected
- Number of potential users
- Number of concurrent users
- Number of named users
- Number of active users

Source: Open User Recommended Solutions consortium, Philadelphia

Yellin estimated that about half of Legent's customers favor some kind of metered billing, while the others favor more traditional approaches based on measures fixed at contract negotiation time.

Devilish details

While Legent said it is easy to define the goal of metered billing — fairness to both parties — the devil is in the details.

Kim Strohm, Legent's senior director of planning and operations, said usage-based billing "may be the ultimate in fairness" because customers pay for just what is used and presumably for the value received. However, Strohm said, it does not necessarily satisfy a key customer demand for budget predictability. "I don't think companies want their software budgets to act like telephone bills," she said.

"It does not sound appealing to me personally," said David Quigley, director of computer services at Minneapolis-based Target Stores, a national chain of 550 discount outlets. He said he fears that unpredictable spikes in retail sales or other corporate activity would give rise to unpleasant peaks in his software invoices.

Legent user H. William R. Townsend, manager of computing services operations at Air Products and Chemicals, Inc. in Allentown, Pa., said the concept of usage-based billing appeals to him. "The advantage is you pay for what you get," he said. "The disadvantage is you may not be able to predict your long-term costs because now you have to predict two variables — price changes and use changes." Townsend said Legent and other vendors must find a way to even out peaks and valleys in billed usage to ensure customers have budget predictability.

Mid-Atlantic correspondent Thomas Hoffman contributed to this report.

Long live simplicity

While Legent explores usage-based billing, it is more than a year into a program offering enterprise licenses.

Under this type of arrangement, large customers sign multiyear contracts for essentially unlimited use of a basket of Legent products. The user sends in a single check each year for an amount known in advance.

Target Stores just signed a four-year enterprisewide agreement for use of 10 Legent products. "Now we can add Unix boxes out [in the stores], upgrade our mainframe or add more stores, and it doesn't matter," said Carol Flaig, general manager of network systems.

Flaig hailed such umbrella agreements as the wave of the future for Target Stores and its software vendors and said she hoped they would end vendor disputes, unpredictable bills and skyrocketing prices. — *Gary H. Anthes*

HDS unveils smaller DASDs

By Jean S. Bozman

PALO ALTO, CALIF.

Hitachi Data Systems Corp. (HDS) shrank its IBM-compatible disk drives last week, squeezing the equivalent of three IBM-compatible 3390 Model 3 drives into a single 90G-byte cabinet. It will replace the year-old HDS 7390 line, to be discontinued by year's end, HDS said.

The new device, the HDS 7693 Disk Array, has a 1G-byte cache memory and will ship by July for about $11 per megabyte of memory, analysts said. If it includes the 7690 controller, the HDS 7693 costs $14 per megabyte. A 270G-byte companion storage product, the HDS 7699 Disk Array, is due to ship in third-quarter 1994. The high-end product will compete with IBM's triple-density 3390 Model 9, which IBM announced in May for a June delivery [CW, April 12].

Both the IBM and HDS triple-density disk drives will sell for roughly $4 to $5 per megabyte, industry analysts said. However, the high-capacity HDS and IBM units will provide slower performance than the base models, they said. Both the HDS 7693 and the HDS 7699 will use a compact 6½-in. disk.

The triple-density IBM 3390-compatible disks could blunt the appeal of Storage Technology Corp.'s Iceberg RAID 5-plus array in large IBM mainframe shops for those seeking inexpensive, high-capacity storage. Those seeking error recovery and parity may decide to wait for Storage Tek's twice-delayed Iceberg, which is set to ship later this year [CW, May 24].

Users are expected to benefit from the HDS subsystem's smaller footprint because a cabinet housing 90G bytes of memory and a 7690 controller takes up 14.4 sq ft. Bob Prosen, director of capacity and contingency planning at Sprint Corp., said the more compact units would require less than half the floor space of IBM 3390 models holding the same amount of data. Sprint is testing the 7693.

RAID stepping-stones

HDS said it plans a stand-alone redundant arrays of inexpensive disks (RAID) product for the IBM-compatible mainframe market for the mid-1990s but gave no details. Its Single Large Expensive Disk (SLED) or current direct-access storage device technology, will migrate into what HDS termed its Small Technologically Advanced Reliable (STAR) disk technology, which is a half-step to full RAID.

HDS' current line supports RAID-1 mirroring and RAID-3 high-speed data transfer in the backup system for its HDS 7900-6 semiconductor disk product. Hitachi Ltd. is already shipping a unit in Japan that supports RAID 3, RAID 4 and RAID 5 software with a 20M byte/sec. data transfer rate, HDS said.

But HDS' RAID offerings are far from complete. "The reason why they're stressing this acronym STAR is that they would like people to get the message that it's between SLED and RAID," said Omri Serlin, president of ITOM International Co. in Los Altos, Calif. "But they don't have a RAID offering yet. That will take a considerable amount of re-engineering."

IBM is expected to ship a RAID product in early 1994, said Paul Wolfstaetter, a program director at Gartner Group, Inc.'s Large Computer Strategies Group. HDS is expected to ship its answer to that about 12 to 18 months later.

Client/server

Bank eases data access

By Nell Margolis

NEW ORLEANS

Mellon Bank Corp.'s Financial Institutions Outsourcing (FIO) Group is poised to unveil a client/server system aimed at dispersing highly targeted information across a bank's entire organization. The rollout is proceeding despite the imminent sale of the group's corporate parent, Mellon Information Systems, to an unknown bidder.

Currently in beta testing at three unidentified Mellon FIO client banks, the product will allow users to access whatever data serves their individual needs from any banking application, regardless of platform or geographical location, a Mellon spokesman said.

Mellon staged a mini demonstration at the American Bankers Association's annual National Operations and Automation Convention here.

Mellon IS in Pittsburgh was put on the block earlier this year in the wake of its $31 billion parent's rededication to core banking activities [CW, March 22].

Ownership uncertainties notwithstanding, Mellon FIO has lined up an august list of strategic partners to deliver the bank information management system — codenamed InformEnt, according to a source close to the bank — in early 1994.

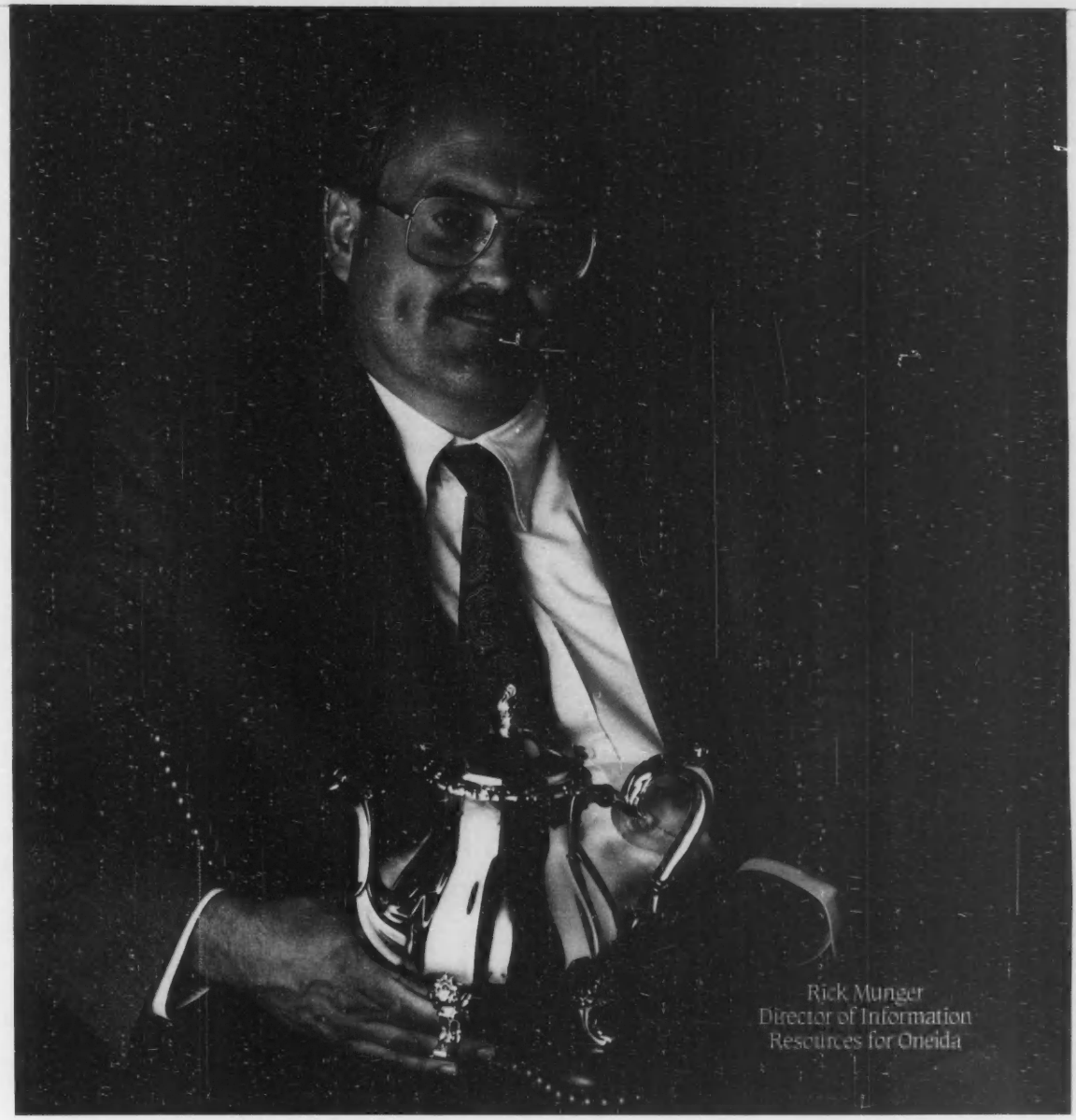
Hewlett-Packard Co. will bring its HP 9000 Unix workstations; Oracle Corp. will supply the database engine; Powersoft Corp. will give the development tools; and Indigo Software Corp. will supply the report writing tool.

Well worth the risk

HP account representative Don Lind said any qualms his firm might have felt about taking on an unknown strategic ally faded in the face of Mellon IS' potential clout in a quickly massing market.

"A system like this is what customers are asking for, and no one's really supplying it yet — not in one package," he said. "Someone *has* to deliver it. Whoever buys Mellon IS is going to want to put a lot of resources behind this project or they'll risk losing market share."

Mellon IS, Lind noted, has "both the software expertise to create the offering and established relationships with about 200 customer banks to sell into. Lots of companies have one; how many have both?"



"When we decided to downsize, I was pleasantly surprised to see that CA's a leading AS/400 software vendor. The fact that they offer the leading AS/400 manufacturing and warehouse software made it much easier for us. It's always better to go with somebody you already know and trust."

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News Shorts

Novell to acquire object maker

Novell, Inc. has announced plans to acquire Salt Lake City-based **Serius Corp.** for $17.3 million. Novell bought a small equity stake in the object-oriented tools company early last year. Serius has a library of objects that nonprogrammers can use to create applications by pointing and clicking. Applications built with Serius objects can be ported to Apple Computer, Inc. Macintosh, Microsoft Corp. Windows and Unix environments; support for OS/2 and Windows NT is also planned. Novell said it is buying the company because Serius' building-block approach allows users to access and build vertical software solutions faster.

Public access to documents debated

Rep. Edward Markey (D-Mass.), chairman of the House Subcommittee on Telecommunications and Finance, last week asked the **U.S. Securities and Exchange Commission** (SEC) to explore making corporate financial statements in the SEC's electronic data gathering, analysis and retrieval system available free to the public via the Internet. Critics have complained that the SEC's current plan to make filings available electronically via commercial information services providers interferes with the public's right to free and easy access. The SEC has countered that it is not its business, nor does it have the budget, to offer electronic access to the 65G-byte database.

Utility adopts client/server

Pacific Gas & Electric Co. (PG&E) in San Francisco is embarking on the client/server road, starting with a rework of its massive Customer Information System. PG&E, with 20,000 PCs and 400 Banyan Systems, Inc. local-area networks, is reconstructing its customer information architecture, going to Microsoft Corp. Windows NT on the desktop and IBM DB2 on its hosts. This architecture will replace DOS, Windows and a homegrown flat-file database on the host. PG&E's in-house team is working with **Andersen Consulting**, **Microsoft** and **Mozart Systems Corp.** on the multiyear development effort.

Fedex IS VP joins BellSouth

Federal Express Corp. Corporate Systems Development Vice President Jon Ricker, whose efforts helped Fedex to a prestigious Malcolm Baldrige National Quality Award in 1990, is on the move from transportation to communications. Effective June 15, Ricker will be assistant chief information officer at **BellSouth Telecommunications, Inc.** in Atlanta.

Packing more routing punch

McData Corp. has announced products that will reportedly allow a Systems Network Architecture (SNA) cluster controller, such as McData's LinkMaster family, to encapsulate IBM SNA transmissions into Transmission Control Protocol/Internet Protocol (TCP/IP) packets. This would leave more router resources for handling TCP/IP traffic, McData said.

SHORT TAKES **Kalpana, Inc.** said last week it will develop products that integrate its Ethernet switching technology into **Hewlett-Packard Co.**'s 10Base-T smart hub.... **Electronic Data Systems Corp.** announced last week that it will offer a $399 suite based on software derived from **Lotus Development Corp.**, **Software Publishing Corp.** and **WordPerfect Corp.**, but it will be available only to Armed Forces sites.... **IBM** announced Network Design and Analysis/2, an OS/2 version of a host program that generates routing tables for SNA and Advanced Peer-to-Peer Networking or a mixture of both.

News shorts, *page 16*

When overnight isn't good enough

By Lynda Radosevich
ATLANTA

Not to be one-upped by new communications technologies, power users Federal Express Corp. and United Parcel Service, Inc. displayed products of their own at Comdex/Spring'93 last week. Both firms showed attendees new features on systems that help customers ship and track their packages.

One feature that distinguished their goods from the rest of those displayed on the show floor was price: The shipping companies will install the hardware and software at customer sites for free.

Fedex unveiled a new hardware and software system designed for small businesses and remote offices that ship as little as one package a day. Called Powership 3, the system comprises an Intel Corp. 80386-based PC from NEC Technologies, Inc., customized DOS-based communications and graphical database software, a printer for reports and a small printer for bar-code labels.

Customers can enter up to 32,000 addresses into the database, print their own labels rather than handwriting them and keep track of their shipping expenses and volumes. Also, customers can dial into Fedex shipment information databases and track packages via modem.

For customers interested in just the tracking capabilities, Fedex handed out free DOS and Microsoft Corp. Windows communications software for dialing into the tracking databases.

"It's fantastic," said Phillip Tetreault, a consultant at start-up Perisol Technologies in Raleigh, N.C., which develops peripherals for the banking industry. "Using this, when you ship something and the recipient says he never got it, you can tell him right away when it got there, who signed for it — everything."

Slimmed-down version

The Powership 3 is an updated version of a bulkier system that Fedex has been shipping to high-volume customers since 1991. Currently, more than 25,000 customers have the automatic shipping and tracking system, and packages sent using the system represent half of the 1.8 million packages Fedex sends each night, said Laurie Tucker, vice president of customer automation and invoicing.

Fedex is rolling out Powership 3 in regional markets, starting with the Dallas, Chicago, Kansas City, Minneapolis and Phoenix areas, and is targeting nationwide use for next year.

Meanwhile, UPS' booth displayed updates to the company's shipping and tracking systems.

Called Maxitrac and Maxiship, the system includes a 386-based PC, separate bar-code printers for scannable labels and reports, software, a 14.4 bit/sec. modem and an electronic scale. Currently, UPS has 26,000 customers using its DOS-based tracking software, and the company plans to offer a Windows version "soon," according to Phil Nardomarino, applications manager for customer systems.

The system, which costs UPS $4,000 to $5,000 per site, is worth the expense because it reduces the calls that UPS telephone operators must process and cuts the amount of information that must be keyed into the company's database, Nardomarino said.

UPS customer Dennis Nugent, warehouse manager at W. W. Granger, an industrial supply company in Chicago, said the Maxiship system replaced a manual system that handled 3,000 packages per day.

Vendor flurry entrenches PC Card acceptance

By Michael Fitzgerald

A spurt of activity in the PC Card market signals that vendors believe the new standard has been accepted by the market and is now stable.

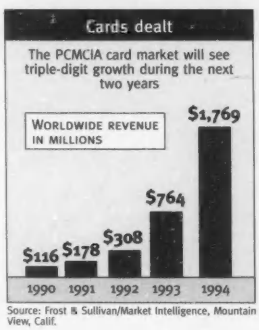
PC Cards, the short name for solid-state storage devices that adhere to the Personal Computer Memory Card International Association (PCMCIA) standard, now are used mostly as random-access memory upgrade cards. They can also accommodate peripherals, such as modems and local-area network adapters, as well as software applications or even hardware and software combinations.

Because of PC Cards' speed, small size and low-power draw, vendors are building drives that support the cards into most portable computers today.

"PCMCIA is the bus of mobile computing and will have the same beneficial impact that the AT bus has had for desktops," said Leslie Fiering, an analyst at Gartner Group, Inc. in Stamford, Conn.

But the market for PC Cards has taken a while to gain momentum, in part because the cards were not as easy to swap as floppy disks. Recently, the PCMCIA released Version 2.01 of its socket services standard, which controls how data on the cards is read, and appears to have stabilized the standard.

"It's time — the standard is really there now," said Andrew M. Seybold, editor in chief of "The Outlook on Professional Computing," a newsletter in Brookdale, Calif.



Source: Frost & Sullivan/Market Intelligence, Mountain View, Calif.

Recent developments include the addition of PCMCIA drives by an array of notebook makers as well as some desktop vendors.

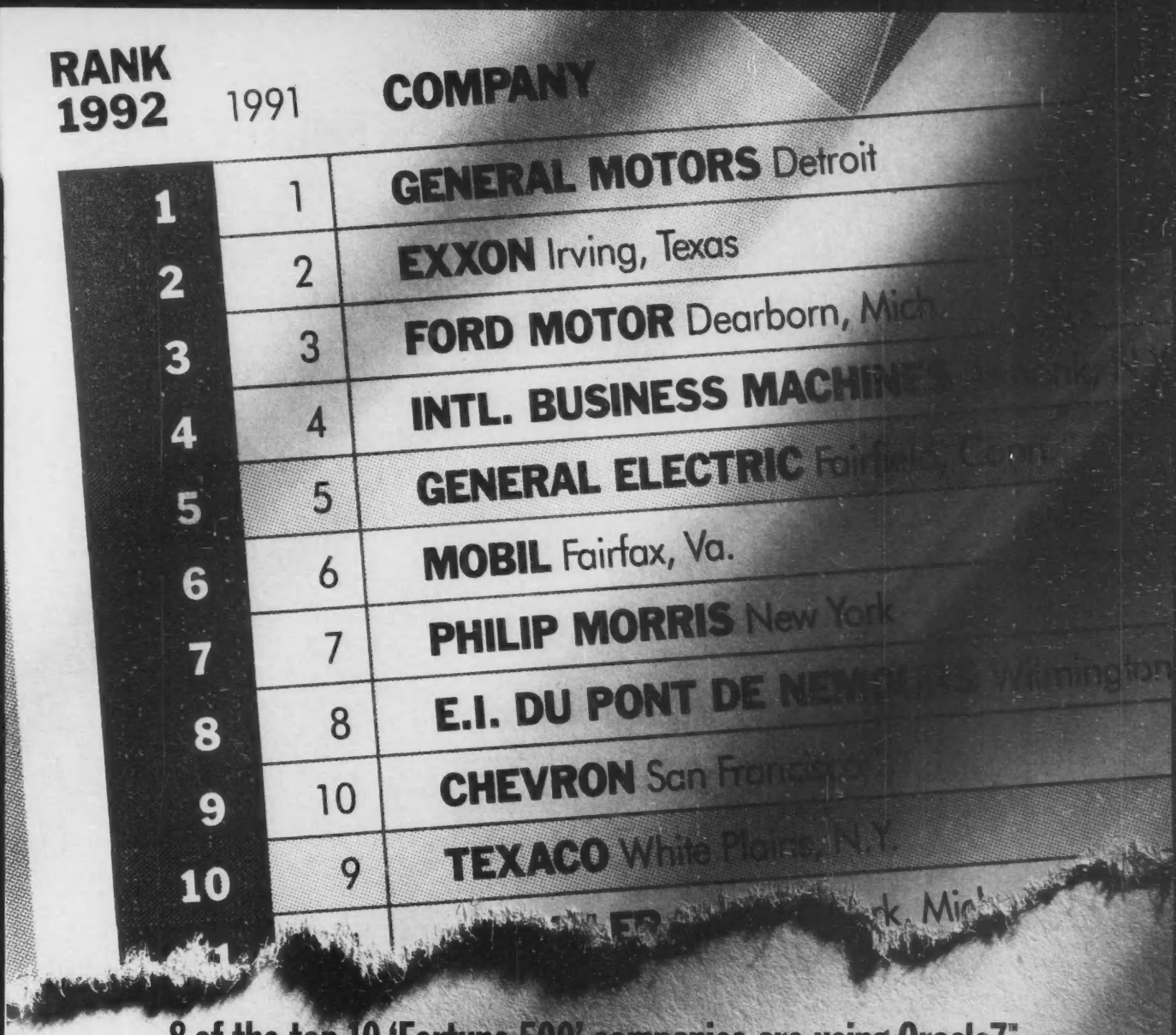
For example, Digital Equipment Corp. announced that it will offer PCMCIA drives as an option in its servers. Hewlett-Packard Co. is expected to follow suit tomorrow for its new Vectra desktops. IBM PC Co. is expected to make PCMCIA drives standard on its new "Green PC" and will also offer them as an option in its new Personal System/2s (see story page 1).

Beneficial actions

Also in PCMCIA's favor is a recent decision by Intel Corp. to give the standards body its Exchangeable Card Architecture, which eliminates the potential for two incompatible standards to develop.

Sources also said IBM, Toshiba Corp., Seagate Technology, Inc., Maxtor Corp. and SunDisk plan to announce in mid-June that their PCMCIA storage devices will be fully compatible with one another, which should make the PCMCIA-ATA, or AT architecture, a de facto storage standard. The companies refused to comment.

Numerous vendors are making cards, and some new players will soon bet on the market, including Simple Technologies, Inc., a fast-growing maker of RAM upgrade cards. By year's end, "We will build modems and adapter cards for the PCMCIA market," promised Mike Moshayedi, president of Simple Technologies.



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Alpha PC revs up for Windows NT

By Michael Vizard
ATLANTA

Digital Equipment Corp. last week sought to invigorate its desktop systems drive with the unveiling of the $6,795 DECpc AXP 150 system. The Comdex/Spring '93 arrival of DEC's long-awaited Windows NT platform is likely to serve as a harbinger of change that will reverberate throughout its entire product line [CW, May 17].

DEC faces numerous product-positioning obstacles in its quest to market Windows NT alongside OpenVMS and the Open Software Foundation's OSF/1 systems. And DEC will also have to overcome a late jump out of the Windows NT starting gate, analysts said.

At Comdex, Microsoft said it will initially ship CD-ROMs that will have binaries for Intel Corp. and Mips Technologies, Inc. systems. Binaries for DEC's Alpha AXP processor will be added to those CD-ROMs when they become available.

This lack of initial support for Alpha binaries means developers will be concentrating most of their efforts on Intel and Mips platforms ahead of Alpha platforms, said Chris Christiansen, an analyst at International Data Corp. in Framingham, Mass.

In the works

Microsoft said 2,000 commercial applications are currently under development; more than 500 will ship by year's end. DEC, meanwhile, said 300 commercial Windows NT applications will be recompiled for Alpha AXP systems this year. And by June of next year, there should be 1,500 Windows NT applications available for Alpha, said John J. Rando, DEC vice president of multivendor customer services.

But unless DEC can actually deliver that installed base, many software vendors are likely to follow the same path as Frame Technology Corp. in San Jose, Calif. Frame has decided to forgo both the Alpha AXP and the Mips platforms because the cost of supporting these platforms is not likely to be justifed by the volume, according to V. Siva Kuma, general manager at Frame's Desktop Products Division.

As a result of these market realities, DEC said it expects about 90% of the Windows NT systems it sells will actually be Intel systems. "We have to be realistic," said Enrico Pesatori, DEC vice president and general manager for the PC business unit.

Intel "has [many] companies behind it, and [DEC] can't outrank that" with software vendors, Pesatori said.

DEC said it will offer OpenVMS and OSF/1 on its new PC systems by the end of this year. But those Extended Industry Standard Architecture bus systems will be offered only as servers that will be comparable to a $1,495 system running Windows NT Advanced Server Edition.

In the first half of 1994, DEC will offer a $3,000 desktop PC that will run NT, OpenVMS and OSF/1. That system will be based on a Peripheral Component Interconnect bus, said Jon Roskill, marketing manager for Alpha desktop systems.

Senior writer Michael Fitzgerald contributed to this report.

Integration takes center stage

New features not a priority for developers

By Michael Vizard
ATLANTA

After years of trying to overwhelm customers with features one-upmanship, many PC developers are now rearchitecting their products to offer tighter application integration.

The change has come about because developers have finally realized that users are ignoring most of the features in any given software package.

"We're about a year into adopting Windows, and at this stage of the game there are a lot of features that are not being used," said Scott Brady, data resource manager at Holland America Line, Inc. in Seattle.

Different angles

Vendor understanding of this was evident at Comdex/Spring '93 last week.

"In the next release of our products, we're going to revisit how the applications integrate with one another," said Mike Fritz, Microsoft's group marketing manager for developer relations.

To that end, Microsoft will make use of an automation feature included in Version 2.0 of its OLE facility.

This feature provides developers with a common macro language, which enables them to work against a range of applications. This means that rather than having a single type of macro for each application, information systems developers will be able to create macros and intelligent agents that could be applied to a series of users and applications.

"There will be no walls between applications," said Leslie Kock, a product marketing manager for Microsoft's Excel spreadsheet.

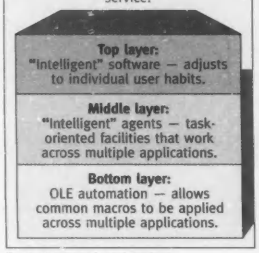
But providing OLE 2.0 is only the "plumbing" that will allow developers to create tightly integrated applications, noted Frank Ingari, vice president of marketing at Lotus. At Comdex, Lotus showcased Version 2.0 of its SmartSuite offering. Due in July, SmartSuite 2.0 adds more intelligence to the translation process across applications.

This means, for example, that Freelance will recognize that a user is attempting to transfer a chart from 1-2-3 to Freelance and will automatically convert that data into a Freelance format. Lotus has also added support for an Application Field Exchange Facility that ties SmartSuite applications into Notes.

In a similar approach, Borland International, Inc. is adding a Publish facility to its Quattro Pro 2.0 spreadsheet to make it easier for users to share data across multiple spreadsheets, said Dave Watkins, vice president of product management at Borland.

Inside an 'intelligent' application

PC software vendors agree that future applications will contain the following hierarchy of ease-of-use service:



Source: Vendor and user interviews

Next in line

After implementing the plumbing required to integrate applications and developing agents that will work across applications, vendors said their next goal is to develop versions of their software that adjust to the habits of individual users.

"Ultimately, I'd like to see software that can figure out that I'm not using 50% of the features and not load these features so it will run twice as fast," said Will Reynolds, Lotus' director of development for SmartSuite.

"The software is going to be able to figure out what you are going to do next and make that process the automatic default," said Jerry Michalski, a contributing editor to the "Release 1.0" newsletter in New York.

But users should not expect tremendous advancements in the near future. Most developers are just beginning to learn how to implement the basic plumbing that will be provided by OLE 2.0.

In Version 6.0 of WordPerfect, there are 10 Coach facilities that walk users through their task or automatically perform those functions if instructed. WordPerfect has made another 10 Coaches available on its bulletin board service, and it will provide users with the tools to make their own Coaches, according to product manager Todd Ashman.

IBM sets PS/2 update

CONTINUED FROM PAGE 1

or other AT bus machines. Sources said the company may price the new boxes as much as 30% less than similarly configured models of the current PS/2 line.

Varied reaction

User reaction was mixed. Strong MCA shops were pleased with the news. Bruce I. Linker, assistant vice president of information systems at Dean Witter Reynolds, said, "This is what I was waiting for [from IBM]. The announcement looks very interesting, especially if it's a price drop and I can get built-in Token Ring."

But Jockey International, Inc. in Kenosha, Wis., has left MCA behind in favor of the ValuePoint line, according to PC coordinator Jacqueline Bynsdorp. She said she is tired of having to pay $1,000 to replace a single 60M-byte hard drive on an MCA machine.

Sources said IBM has pushed back plans to introduce its Ambra line of PCs in the U.S. to the week of June 28. Ambra is now sold in Europe and Canada.

This product line, which is not an IBM-brand product but is built by Individual Computer Products International Ltd., an IBM subsidiary in Singapore, will, like the PS/2 line, top out with the Blue Lightning chip, according to sources. This creates the possibility of increased brand confusion.

"They're absolutely shotgunning the market in hopes of catching new users," Dunkle said. "We expect that the new PS/2s will bring a sigh of relief to the market, but Ambra will really muddy the waters."

IBM refused to comment on specific products.

Meanwhile, the sub-4-pound ThinkPad 500 is slightly smaller than a notebook with a 7.5-in. screen. It has an external floppy drive, uses the 486SLC2 (a 25/50-MHz IBM derivative of Intel Corp.'s 1486SL microprocessor) and is expected to have up to 3 hours of battery life.

The 5.8-pound ThinkPad 350 will run on an Intel 35-MHz 486SL. The monochrome notebook will have a battery with a built-in charger that can be plugged into electrical sockets. The battery will give between three and four hours of life.

Flip-flop feature

The Model 350 was designed to let users swap the floppy back and forth with an unannounced wireless Cellular Digital Packet Data communications module, sources said.

Both new ThinkPads will use PCMCIA slots, and the Model 500 will have an external floppy drive. IBM is expected to price the subnotebook 500 at $2,500 and the 350 below $2,000.

The PS/Energy Workstation will be the first in a family of "green" PCs, with more to come in the fall.

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Microsoft charts client/server course

By Michael Vizard
REDMOND, WASH.

While Microsoft Corp. hosted a coming-out bash for Windows NT at Windows World in Atlanta last week, company engineers here were working on the next generation of Microsoft's client/server technology.

Though Windows NT will initially give Microsoft a high-end server for local-area networks [CW, May 24], Microsoft executives said the next client/server move calls for a revamping of the Windows operating system — to make it easier to find files and resources — and the building of a distributed file system (DFS) that Microsoft is developing to link all Windows NT systems on the network.

The DFS will allow users to seamlessly access any resource that resides on Windows NT systems across the network without knowing what drive a file is located on, said Doug Henrich, Microsoft group manager for developer relations. This universal system view capability is being created as part of Microsoft's object-oriented operating system project, called Cairo, which is due in 1995.

"Having a distributed file system is a must for creating a virtual mainframe in a client/server environment," said John Donovan, a director at WorkGroup Technologies, Inc. in Hampton, N.H.

But it is unclear whether users will wait for Windows NT to mature before fully embracing client/server, Donovan noted. "The Unix vendors are way ahead of NT in terms of providing this capability. Everything about NT screams a need for a distributed file system."

NT provides a domain service capability that gives users access to a specific set of servers. However, it lacks a global directory service similar to the services provided by Novell, Inc.'s NetWare 4.0 or Banyan System, Inc.'s Vines software.

To make up for this, Microsoft said it plans to build a DFS that will include the functionality of a global directory service and will provide the distributed system capabilities typically associated with Unix and Digital Equipment Corp.'s OpenVMS systems.

Because the current version of Windows NT lacks robust distributed system capabilities, most users said they see it as a LAN solution.

"Right now, NT is laid out as a direct competitor to NetWare. The management tools for building a distributed system like Unix are coming in a future release," said Richard Lansing, a vice president at Chemical Banking Corp. in New York.

As a result, most users will probably restrict Windows NT to pilot projects that call for a server on a local workgroup. "We won't put NT out as a production system until we're sure it's secure. We're risk-averse when it comes to new operating systems," Lansing said.

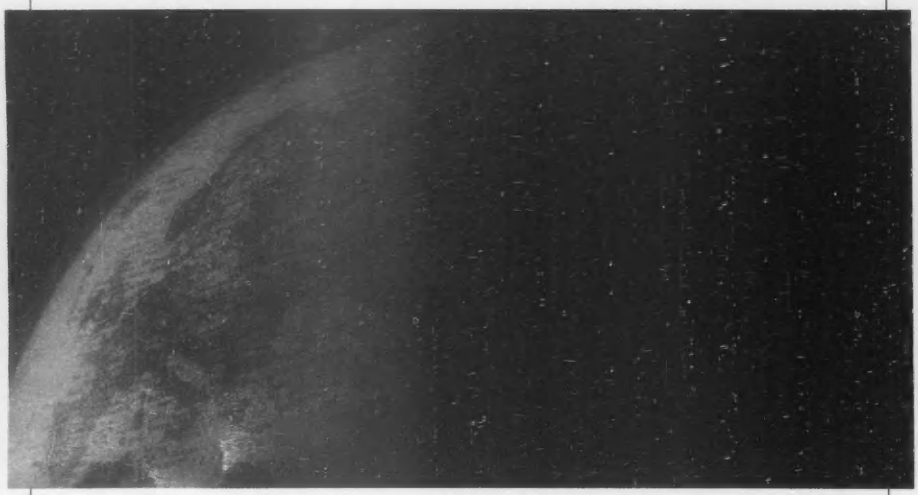
Icing on the cake

The DFS capability will eventually be added as another service to be layered on top of modularly architected Windows NT. The DFS will be part of Microsoft's Windows Open Service Architecture, which Henrich said will allow Microsoft to add new system services to Windows NT over time.

Microsoft is also working on a revamp of its Windows operating platform under the code name Chicago. The revamp is expected to go into beta testing this summer and will require Microsoft to reuse the Windows interface for NT some time in 1994 as well, said Jesse Berst, editor of the "Windows Watcher" newsletter.

Windows 4.0, which is expected next year, will include built-in support for network protocols, according to Rogers Weed, Windows product manager. It will also include an integrated file and program manager, support for preemptive multitasking, a mail client capable of supporting voice and fax, a common inbox, a common directory tree and folders that will resemble the folders currently used in the Apple Computer, Inc. Macintosh operating system, Berst said.

With the arrival of built-in network support in Windows 4.0, Microsoft essentially will have merged its Windows and Windows for Workgroups offerings.



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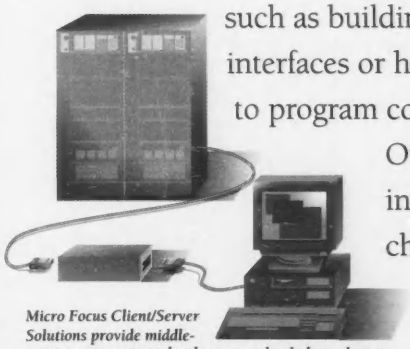

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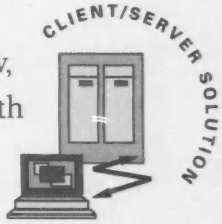

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OS duel shifts

CONTINUED FROM PAGE 1

aged as a system, and we have decades of experience making heterogeneous systems talk to each other," Cannavino said.

Despite formal introductions last week, neither Microsoft's NT nor IBM's OS/2 2.1 has shipped yet. Even so, users are already making plans for the updated operating systems. It appears those plans may reverse the traditional roles of the competing operating systems: Windows on the client and OS/2 on the server.

Microsoft's Bill Gates *shared NT beta-test success stories*

Many Windows 3.1 users are plotting a server course for Windows NT, based both on its scalability to multiprocessor systems and its multitasking and multithreading abilities. Meanwhile, a speed-enhanced and more reliable OS/2 2.1 is primed for a move to the client.

Indeed, IBM has stated its intention to put the necessary resources — marketing, support and otherwise — behind OS/2 2.1 to make it a success, said Brent Williams, program director for PC software at International Data Corp. in Mountain View, Calif.

Other factors could also help OS/2 2.1, Williams said. These include a recent move by hardware vendors to custom-configure systems rather than prebundle software and the slips in Windows NT's schedule. It was originally slated to ship before the end of 1992. Then the date shifted to first-quarter/spring 1993 and then summer. Microsoft's revised schedule could place the release in late August. "Now that NT's late, people with critical needs are going to go with OS/2," he said.

Robert Holmes, computer technology research analyst at Southern California Gas Co. in Los Angeles, is one user who has already commited to OS/2. He said that while OS/2 2.0 is now used primarily by users needing to run OS/2-specific applications, Version 2.1 appears to be solid enough for him to offer it as a general desktop option for OS/2, Windows 3.1 and DOS users.

There were "all kinds of things that were potential support hits [in OS/2 2.0]," Holmes said, noting that most of these problems are gone now. He said driver support has improved, particularly for video, and that glitches that could have become problems, such as the ever-expanding initialization files in the WorkPlace Shell, have been fixed.

OS/2 2.1's Windows 3.1 support will win it some other converts. "It certainly does enable us to do quite a bit that we couldn't do with 2.0," said Karl Hamme, lead programmer analyst at Geico Insurance in Washington, D.C. In particular, Hamme said, developers at Geico no longer have to reboot to DOS and Windows 3.1 to use several important Windows-based development tools.

While OS/2 2.1 may help IBM capture some desktops, Windows NT seems targeted in some accounts primarily for servers. James Richards, PC systems administrator at Psicor, Inc. in San Diego, said his company wants to move some applications to Windows NT to take advantage of the performance of multiprocessor systems.

And William Cornfield, president of the Windows Support Group consultancy in New York, said he believes one group of users will certainly move to Windows NT soon — those using SQL Server on OS/2. "I would be shocked if by the end of the year you found 10% of SQL Server users still on OS/2," he said.

SQL Server for Windows NT is more stable than the OS/2 product, even as beta-test software, Cornfield said.

IBM's James Cannavino: *IBM has the experience to tie client/server systems together*

SQL Server is not the only draw for NT, however. A user at a large West Coast aerospace firm said he is looking forward to Windows NT's preemptive multitasking to make his process control application more powerful and responsive. One part of the system controls alarms that warn of dangerous situations in a chemical plant, so any improvement in performance is important. His current application runs on Windows 3.1.

"NT is definitely where we are going to head to," the user said. "That's where the future is."

Performance is also crucial to Psicor, which supplies doctors and equipment for 80,000 medical cases per year to some 600 hospitals around North America — with guaranteed response times of five minutes.

"We're just crying for resources," Richards said. "We'd convert to 32-bit systems for speed alone."

OS/2 bugs force firm to backtrack

By Rosemary Cafasso

CONYERS, GA.

Fed up with mysterious system glitches on its IBM OS/2 2.0 servers, Lithonia Lighting Corp. plans to go back to Release 1.3 of the operating system, according to Jeff Kernan, vice president of information systems.

"From a business perspective, I have burned so much time, it is time to drop back and punt," he said.

Since January, Lithonia has experienced system "hang-ups" that even IBM has had trouble diagnosing, Kernan said. The problems occur on servers running OS/2 2.0, IBM's LAN Server 3.0 and multiple applications, including software designed in-house.

> IBM executives said IBM will train an additional 500 staff members on LAN system and client/server support issues.

Dave Sawyer, an IBM marketing representative who handles the Lithonia account, said IBM is continuing to work with the lighting company, which he said has a complex and somewhat unique set of software.

"We have had some problems that we have not been able to figure out exactly what they are," Sawyer said.

Two other OS/2 users contacted last week said they had not experienced serious problems with LAN Server 3.0 in tests. However, one said he frequently finds it difficult to get technical answers and bug fixes from IBM when it comes to LAN Server 3.0.

The IS department at Lithonia provides service to nearly 100 independent agents as well as to its own internal users.

Kernan said he opted to move back to Version 1.3 when the system problems reached a point where agents were spending too much time with computer issues and not enough with the business of selling lighting equipment.

Kernan and Tom Martin, director of computer services at Lithonia, said IBM has been responsive and gave them access to its OS/2 developers as they migrated to OS/2 last year. But as problems continued and as IBM could not solve the server hang-up issue, Lithonia grew frustrated with IBM's inability to provide it with solutions.

Recently, Kernan said IBM suggested an upgrade to OS/2 2.1, which was officially unveiled in New York two weeks ago. Kernan said his staff has tested Version 2.1 and found no problems with it, but he is not confident that it would stabilize his environment.

Version "2.1 may be the answer and we will try it," Kernan said. "But I am not going into a customer site and subject them to more trouble potentially. The track record is not good."

Lithonia plans to swap out Version 2.0 at 32 sites and reinstall 1.3. Several sites that were migrating to OS/2 for the first time will now get 1.3 instead of 2.0 as planned.

Internally, Lithonia runs about 100 OS/2 servers, and only 10 are Version 2.0. Martin said these servers, which also run LAN Server 3.0, do not seem to have the problems that have plagued the field systems.

A matter of timing

A new release of the Windows NT "March beta" sent in April to a small number of beta-test users is again raising issues about Microsoft's relationship with Novell, Inc.

The late-April release, which was sent to Windows NT Advanced Server beta-test users, contained changes to the Windows NT Transport Device Interface (TDI) that network requesters use to talk to the operating system.

Microsoft said it made the changes to improve Windows NT performance, but they had a side effect of not working with Novell's beta-test version of its NetWare requester for Windows NT.

Louis Kahn, network administrator at the Centers for Disease Control and Prevention in Atlanta, was one user who received the March beta-test version that was sent in April.

"But I can't install [it]. I don't have an NT redirector from Novell, and I blame that on the fact that Novell didn't get the code before I got it," Kahn said.

Other beta-test users reported the same problem, and Microsoft acknowledged that the TDI had been changed and that Novell would have to provide a second redirector for the new beta-test version.

Microsoft Windows NT product manager David Thacher said the problem was due to an "oversight" on Microsoft's part. He said the TDI would not be changed again.

"There's no question that our top priority is making sure that the NetWare requester works great," he said.

Thacher added that the primary reason for releasing the beta-test version was to let customers test the Apple Computer, Inc. Macintosh connectivity for Advanced Server that had just been added.

Novell sources said they are not particularly pleased with the situation because they will now be forced to support two versions of their requester while the beta test is going on. The requesters will converge whenever Windows NT ships. A new version of the requester should be available within a few days, the sources said.

— Christopher Lindquist

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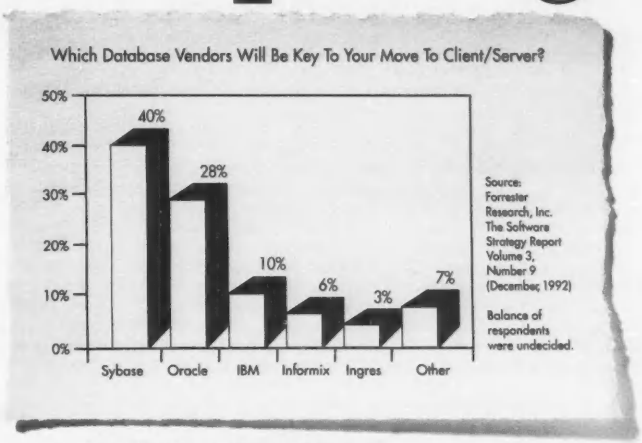

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Windows World Open 1993

Rob Nelson

Microsoft Corp. Chairman and Chief Executive Officer Bill Gates *(center), pictured surrounded by winners of the Windows World Open 1993 Awards (from left to right): William Hamilton, Weston Information Network; Ken Green, J. Walter Thompson; Michael Abele, representing United American Healthcare Corp.; Ken Forster, Lockheed Missiles and Space Co.; Tim Buyers, Shell Western E & P, Inc.; Tim Gauslin, US Geological Survey; Art Hill, First National Bank of Chicago; and Thomas Conophy, Galileo International*

Pen initiatives to ignite market

CONTINUED FROM PAGE 1

Separately, sources said AT&T is considering a plan to start a high-profile evangelical push that will seed EO, Inc.'s pen-based Personal Communicators into key business accounts.

The Jot spec, meanwhile, has the backing of 22 companies, including Apple Computer, Inc., Go Corp. and General Magic, Inc.

Donald A. Zagar, president of Dazzling Pen, a pen computing value-added reseller in Prospect, Conn., said Jot "will fill in some holes in pen-based communications by letting users jot notes down and send them without using frustrating translation software." He said the difficulty in sending electronic ink, as pen input is known, had prevented several potential clients in the grocery industry from implementing systems that use pen input.

Wayne Warwick, director of systems development for the loss control department at ITT Hartford Insurance Group in Hartford, Conn., said the standard will give him flexibility in choosing pen platforms. The insurance company is piloting pen-computing applications using Grid Systems Corp.'s Convertible pen-and-keyboard notebooks and Microsoft's Windows for Pen Computing.

The first major application to use the Jot ink standard may be electronic mail. Pradeep Singh, group manager of mobile services at Microsoft, said Microsoft's Mail will support the ink standard "roughly within a year." Microsoft also plans to support ink in the next major release of Windows.

Lotus was not as forthcoming. Pito Salas, manager of future products, said Lotus supports the Jot standard but has no immediate plans to add support for the ink data type to its CC:Mail software.

Down but not out

Meanwhile, AT&T, which hoped its Hobbit microprocessor and its relationships with EO and Go would enable it to dominate the pen market, has been disappointed by the market's lack of enthusiasm for the product. Still, AT&T has not given up.

Sources close to Go and AT&T said Go approached AT&T two weeks ago with an idea to give EO communicators to as many as 25 high-profile individuals.

While the plan would focus on proving the genuine business functionality of these devices, it would also include celebrities to address the potential consumer market. One such user might be the San Francisco 49ers, where the EO could replace the headsets that currently handle communciations between coach George Seifert and his staff in the booth away from the field, a source said.

Behind this idea is the failure of the market to understand what the EO personal communicator does, the sources said.

"When people see these machines, they get very excited, but nothing's out there right now, and no one's using them," said one source at Go.

Both AT&T and Go refused to comment, but sources said AT&T has jumped on the idea.

Analysts said the seeding idea seemed to make sense. "They have to do it because just putting these things into AT&T phone stores and expecting people to buy them isn't going to do it," said William Lempesis, editor of "PenVision News," a newsletter based in Pleasanton, Calif. "To push it as a horizontal [device] will take time and something like this seeding program."

Mightier than the sword

While Jot could provide the industry with a basic building block, hardware makers continue to try different approaches:

- **Tandy Corp.** and **Casio, Inc.** will release their jointly developed personal digital assistants, the Zoomer and the XL-7000, Thursday at the Consumer Electronics Show in Chicago.
- **Zenith Data Systems** will come to market June 8 with a pen option for its notebooks, sources said.
- On June 15, **Grid Systems Corp.** is expected to make several announcements, including immediate delivery of a 486SL-based version of its Convertible and a 486SL-based version of its PalmPad, to ship in the fall.
- **Apple's** Newton is expected to come to market June 29.

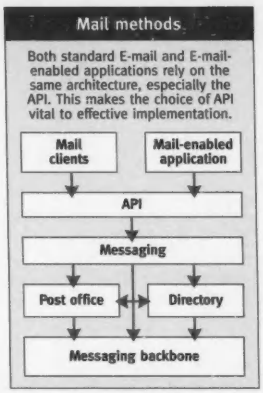
Users wary about launching apps for Windows E-mail

By Lynda Radosevich
ATLANTA

The proliferation of Microsoft Corp. Windows-based electronic mail has vendors positioning the technology as the stepping-stone to advanced applications such as work flow.

Target users at last week's Comdex/Spring '93 have a different idea: While Windows is their platform of choice, they are worried that implementing Windows-based E-mail and mail-enabled applications enterprisewide remains a risky technical — and cultural — proposition.

"I'm concerned about Windows' stability," said Wade Wood, information specialist at United Way in St. Paul, Minn. The organization is looking at the major Windows mail packages to replace host-based mail and is exploring work flow and forms routing. However, "now the AS/400 is stable, and we know messages will make it through the T1 gateways to our Minneapolis office," he said.



Source: Lotus Development Corp./Microsoft Corp.

Cultural issues overshadow technical ones for Robert Fluegel, director of research and development at Advo, Inc., a direct-mail marketing firm in Windsor, Conn. Despite Windows' vaunted easy-to-use graphical interface, some of his company's employees would rather leave the computing to others. "How do you teach an executive to route his own memo when he's used to just giving it to his secretary?" Fluegel asked.

Forewarned is forearmed

At a session on E-mail-enabled applications, speakers warned corporate developers of the many challenges they face in implementing critical mail and mail-enabled applications. For example, they will have to choose from amongst a half-dozen application programming interfaces if they want to develop customized applications.

Other issues include lack of security, text integrity and guaranteed delivery. For example, today's mail and mail-enabled applications have no feature that would keep pranksters from sneaking into co-workers' offices and tampering with message-based applications using their co-workers' log-ons. One fix would be a screen saver that requires a password to reactivate a computer after a period of inactivity.

Another problem, retracting misdirected messages and documents such as confidential product plans, is addressed by WordPerfect Corp.'s Office 4.0 E-mail package. WordPerfect said it offers the only E-mail software that lets users retract messages and routed documents that have not been opened by the recipients.

Despite the challenges, Comdex attendee Judy Fuetter, programmer/application developer at the St. Johns River Water Management District in Palatka, Fla., said she is looking forward to developing E-mail applications once the organization completes its transition from a host system to a Transmission Control Protocol/Internet Protocol and Novell, Inc. NetWare network with Windows-based PCs for 500 people.

Reporter's Notebook

IBM's Jim Cannavino spoofed just about everyone in his keynote address, which was prefaced with a *Saturday Night Live* takeoff called "Industry Update" that included the IBM logo done up to look like an Oreo cookie and hysterical shots of Philippe Kahn as Cap'n Crunch and Bill Gates in a baby outfit. A commentator in the video bemoaned IBM's move away from white shirts, noting that, "When they wore white shirts, they made money." Also included was a clip from a recent Joan Rivers show that highlighted PCs and featured stacks of OS/2. Rivers was in full ditz mode, saying, "I don't do computers because I found out Windows was involved, and I don't do windows."

It surely was an experienced user of 1.0 software who amused the 400 Comdex attendees crammed into an overflow room for a televised view of the Windows NT introduction. When the videotaped portion of **Microsoft** Chairman Bill Gates' infomercial opened without sound, a voice from the audience assured, "That will be fixed in the next release."

In the past, the types of products sold storefront-style on show floors tended to be computer games and luggage carriers, not operating systems. But IBM delivered OS/2 2.1 to anyone with the cash or plastic, claiming sales of 500 copies on the first day of the show. Meanwhile, printer vendors such as **Hewlett-Packard** found that you don't have to truck boxes of glossy product literature to a show. They output the literature right on the show floor using their own products.

IBM held a couple more "technology" demonstrations in its OS/2 booth this time around. These included the IBM Microkernel or "Workplace Operating System" running DOS, Unix, OS/2 and Windows personalities — but only in full-screen mode. Several of the personalities are due to go into beta testing later this year. IBM also showed a version of OS/2 2.1 running on an **AST Research** multiprocessor "Manhattan" machine. A group of IBM developers worked with **Intel** to produce the version, which should go into beta testing this summer.

More than 1,100 show attendees faxed opinions to their congressmen using **FutureSoft Engineering**'s fax software and congressional phone book supplement at the company's booth. FutureSoft said attendees' favorite topics were the budget plan (most didn't like it) and gays in the military.

IBM took the "best dig" award by outfitting its employees with shirts reading NT: Nice Try. The slogan on the back of the shirts read: "OS/2, not just up and coming, up and running."

A **Lotus** representative could not explain the differences between that company's 1-2-3 for Windows spreadsheet and its Improv for Windows spreadsheet, according to an attendee who asked to have the differences explained. "I use them both myself; they are just different," the frustrated rep reportedly said.

Those who have worn out shoes and nerves dealing with the logistics of getting around Comdex and other major trade shows over the years may have noticed the unusually high number of attendees who were physically handicapped or visually impaired. It was refreshing to see them gain access to the technology. However, the medals of honor go to the seeing-eye dogs that led their owners through the crush of people, some of whom thought nothing of brushing guide dog and owner out of the way.

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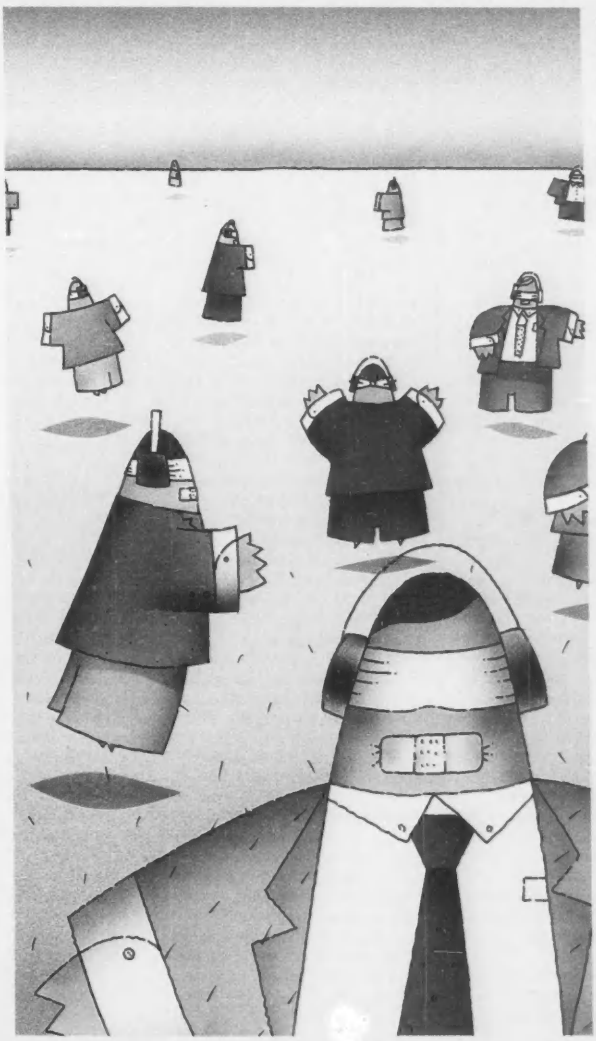

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News Shorts

IBM recalls notebook model

IBM PC Co. is recalling all 150,000 Personal System/2 Model L40SX notebooks it has sold since March 1991. A spokeswoman said IBM has discovered that 15 units sold in Europe have had problems with bad battery circuits that generate too much heat. Although this represents 1/100th of 1% of its units, IBM is recalling every one sold. The spokeswoman said customers would receive notices of what to do in the next 30 days and, in the meantime, they should remove the battery and use the product with an AC adapter.

Railway begins systems revamp

Canadian National Railways in Montreal launched a $100 million project last week that will peform a "heart transplant" on the company's major rail management systems, according to Ronan McGrath, vice president of information systems and accounting. Canadian National will replace its core traffic systems, currently IBM mainframe-based, with a recently developed integrated traffic management system from **Santa Fe Pacific Corp.** in Chicago. The new software is also mainframe-based and will require IBM's DB2. However, McGrath's staff will design a graphical front end to the system using **Microsoft Corp.**'s Windows.

Hanging up on phone crooks

High-tech thieves who fancy stealing cellular phone service may soon be disconnected. Software makers **Computer Sciences Corp.** and **Coral Systems, Inc.** announced last week that they will team up with the security consultants at **The Guidry Group** to fight techno crooks who steal and resell more than $1 million each day in cellular service.

Marcam names Ross in patent suit

In a suit filed last week in Boston, **Marcam Corp.** alleged that **Ross Systems, Inc.**'s Promix software infringes on Marcam's patented technique of determining a bill of materials. Marcam uses this in its Prism software for the IBM Application System/400. Ross Chairman Dennis Vohs said the suit is "without merit."

DEC net management to support NT

Digital Equipment Corp. announced it will support networked Microsoft Windows NT systems with its Polycenter network management platform. DEC said that during the next 24 months it will deliver Windows NT applications for monitoring system resource use and network traffic levels, as well as for managing software distribution and hardware and software configurations. Like **Tivoli Systems, Inc.**, which recently announced a rival NT management product, Polycenter will be able to manage a mixture of NT, Windows and Unix systems, DEC said. Also last week, DEC announced Pathworks for NT.

Shared Medical Systems wins award

Joe Carola, manager of database administration at **Shared Medical Systems** (SMS), won the award for Information Excellence at the **International DB2 Users Group** last week. Carola, whose department supports hundreds of client hospitals tied into the SMS environment, "was instrumental" in organizing and developing a centralized database group.

SHORT TAKES Microprocessor maker **Cyrix Corp.** submitted a plan to the Securities and Exchange Commission to raise $25.4 million with an initial public offering of 2 million shares of common stock.... Still reeling from the competition brought on by the March release of DOS 6.0, **Stac Electronics, Inc.** in Carlsbad, Calif., last week laid off 20% of its 200 employees.

Client/server on users' minds

Database, migration issues dominate DB/2 Users Group meeting

By Johanna Ambrosio
DALLAS

If client/server has a heart, it is usually a database. Not surprisingly, the 1,000-plus database implementors gathered here last week spent a fair amount of time talking about client/server issues alongside the more traditional mainframe challenges of performance and availability.

At this early stage in the client/server game, many attendees at the fifth annual meeting of the International DB/2 Users Group were asking how-do-I-get-there-from-here? kinds of questions. The issues: How to link the server and mainframe worlds, how to figure out where to put the data and what kinds of changes to the mainframe database all this might require.

A client/server panel, made up of user and vendor representatives, drew about 200 attendees. User panelist John Baraldi, vice president at Chase Manhattan Bank NA in New York, advised database gurus to learn more about the world of communications.

"Take your VTAM person and your LAN administrator to lunch and become real good friends," Baraldi said. "You don't need to know the full gamut of communications issues." But database administrators need to understand the impact of using different communications protocols — i.e., using IBM LU6.2 vs. 3270 connectivity.

Baraldi said Chase decides where to put applications based on which platform they will fit on. "Our largest OS/2 database is about 500M bytes, and our largest on Unix is about 5G bytes. Everything beyond that goes on a mainframe," he said.

Other attendees had different concerns, including training, support and cost. "Just the middleware piece of client/server is very expensive," said David Beulke, DB2 database administration manager at Spiegel, Inc. in Westmont, Ill. "There are a lot of hidden costs, like the LAN administrator and applications person in the business unit and backup and recovery."

Some users said their companies are going wholehog to non-host platforms as a cost-control issue. Others said their mainframe database systems are continuing to grow, and still others said they have both.

Similarly, not all are staying faithful to IBM off the host platform. "Some are using or installing IBM's [workstation and server] products; others are already using other vendors' products," said Howard Fosdick, an independent consultant in Villa Park, Ill.

Bank

CONTINUED FROM PAGE 1

perience will make him a valuable player on our team as we continue to deploy architectures such as client/server," Packer said.

However, he added, Anderson's newly minted position signals no new departure for the bank. "It's just part of our continuing commitment to client/server architectures that allows us to blend the end-user playpen with the industrial-strength data center."

During the past several years, the bank has steadily implemented client/server applications, Packer said. One, for instance, allows clients direct access to trust and pension information. Another gives users of the bank's "derivatives" services — e.g., swaps, options, warrants — access to risk management information. Information- access systems for corporate finance professionals now operate in client/server mode.

According to Robert Moll, a banking analyst at Arthur D. Little, Inc., it is hard to find a major bank that is not making a foray into the largely unproven area of client/ server computing — notwithstanding many pitfalls.

"Client/server is compelling for large banks because most of them are coming to realize that about 75% of their IS resources go toward maintaining legacy systems that support the commodity side of banking," Moll explained. "To redeploy these resources toward something more innovative, more apt to offer competitive advantage, they have to encapsulate the legacy system — and that's when they start thinking client/server."

Encapsulation is an increasingly popular approach that involves surrounding older mainframes with gateways, interfaces and utilities that provide users with easy access and ready control of data.

However compelling the architecture may be, baby-stepping into client/server rather than attempting a rapid ramp-up is the way savvy banks are going to go, said Andy Roehr, a banking analyst at BSG Consulting, Inc. in Houston.

"If you want to learn to walk, don't do it on a balance beam," he said. "Nobody's moving their [daily deposit accounting] applications. They're starting with lower level applications like account maintenance — things that are not mission-critical to the bank."

Don't trip

The path to client/server is strewn with obstacles, said Robert Moll, analyst at Arthur D. Little. Among them are the following:

- ▶A deluge of aggressively marketed products in a largely untried area quickly translates into confusion for banks on tight budgets.
- ▶Estimating the time and cost of a client/server initiative is close to impossible, "particularly when the methodologies advocated differ widely."
- ▶Expectations run dangerously high, setting up cheerleaders and users alike for a fall. Moll's advice: "Don't try to build a super-duper-duper workstation that's going to cure every problem in the company. Keep it simple."
- ▶Demand for client/server-savvy professionals far outstrips supply.

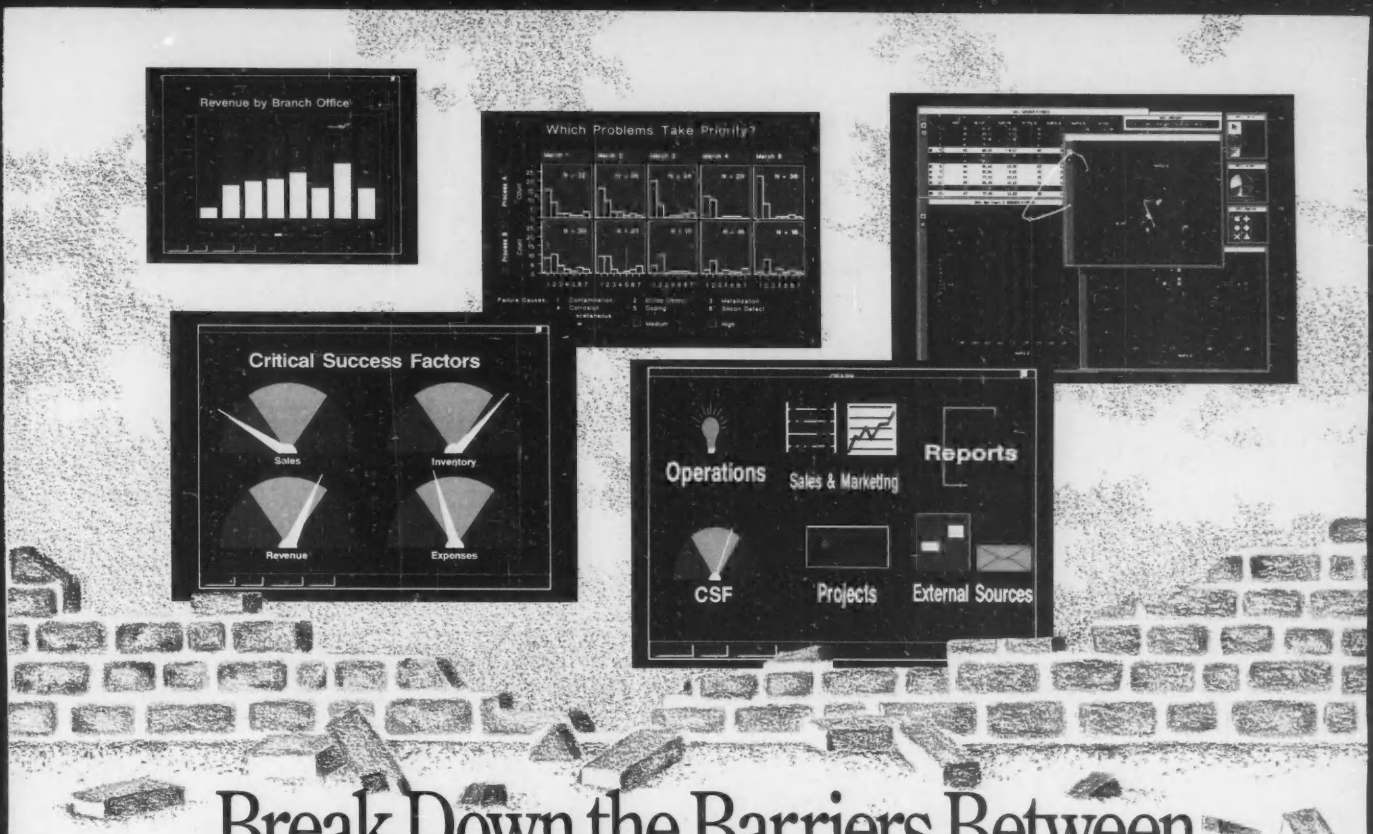
Ace in the hole

Bankers Trust, noted Joseph Ziskin, an analyst at the Boston-based Ernst & Young Center for Information Technology and Strategy, holds an additional ace when it comes to client/server implementation: years of experience as a trading center.

"Companies with large trading organizations are far more advanced in sophisticated transaction processing, in Unix, in open systems — they've been dealing with these questions for years," Ziskin said.

Meanwhile, at Aetna, Anderson's departure translated into promotions for two of his colleagues.

Ann Dunphy, former program manager of market-driven quality, is stepping into Anderson's shoes on an interim basis. Scott McAlinden, Aetna's information technology chief of staff, becomes vice president and chief administrative officer of a new organization, AIT Administration & Finance, created by the merger of the chief of staff's office and the finance and planning group.



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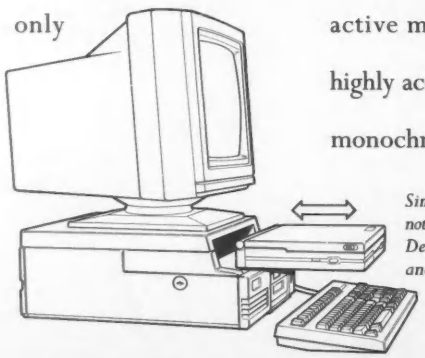

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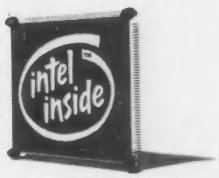

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Next plunges into software with partnerships

By James Daly
SAN FRANCISCO

Next, Inc. Chairman Steve Jobs hosted a revival meeting at last week's NextWorld Expo, crowning the firm's born-again status as a software company with key industry partnerships.

He indicated, however, that if the software strategy does not stick, his company is finished. Jobs did not provide a time frame for that decision, saying he would have to see how successful the new strategy becomes.

"Next still has at least $10 million from Steve and a $50 million line of credit from Canon, so this is not their swan song yet," said Tim Bajarin, president of Creative Strategies Research International, Inc. in Santa Clara, Calif.

Steve Jobs: *Liberated from the black box*

Jobs, who addressed an audience of at least 2,000 for nearly two hours, announced the availability of a new version of the NextStep object-oriented operating system that works on PCs and workstations running Intel Corp. 1486 microprocessors.

"We have liberated NextStep from the black box," Jobs said, referring to the company's slow-selling workstations, which were scrapped in February to allow Next to focus on NextStep [CW, Feb. 15].

Hewlett-Packard Co., Compaq Computer Corp., Digital Equipment Corp. and NCR Corp. have joined the list of PC manufacturers that will offer NextStep 486 as an option on their systems. Borland International, Inc. also announced plans to port its InterBase relational database to NextStep 486, although no general availability date was announced.

Although NextStep has been available for more than four years, its proprietary nature had made it a difficult sell. "Next was never an option before because we had no interest in going to a new platform," said Mike Adelson, project manager of branch automation/retail systems at Chrysler Corp. subsidiary Chrysler Financial in Southfield, Mich.

Chrysler Financial now plans to purchase 2,500 copies of NextStep 486, which will be used in a client/server environment to support more than 100 branches throughout North America.

Putting NextStep on the Intel platform also lessens the fear factor. "People don't want to think that they have to junk their systems to tap into Next; this lessens that perceived risk," said Dwight Koop, executive director of information technology at Swiss Bank Corp. in Lisle, Ill.

NextStep users have long praised its design as one that makes it easier to reuse large chunks of software code. They say it delivers today the kind of object-oriented programming environment that potential rivals — such as the Apple Computer, Inc./IBM joint venture Taligent, Inc. or Microsoft Corp.'s Cairo — project they will not deliver before 1995.

But analysts said the chances of Next's taking over this object-oriented development market are slim, as Microsoft and Taligent are likely to be the real operating system powerhouses in the future.

"NextStep is as good as anything that's out there, but the move [to develop custom applications] may not be as fast as Jobs likes," said David Card, director of systems research at International Data Corp. in Mountain View, Calif.

Riding HP's desktop coattails

Next's partnership with Hewlett-Packard is the firm's best chance to move the NextStep 486 onto the corporate desktop, via HP workstations and PCs.

Next Chairman Steve Jobs said the firms' Object Enterprise partnership will provide one-stop shopping for users who want to bring an object-oriented framework to a client/server environment.

Next will port NextStep to a spectrum of HP computers, including Vectra PCs, the HP Apollo 9000 Series 700 workstations and Series 700 and 800 servers. The Object Enterprise initiative will also integrate key computing standards such as the Object Management Group's Corba and the Open Software Foundation's Distributed Computing Environment and Distributed Management Environment.

Jobs said the partnership will initially concentrate on selling to financial services users, who were among the first to embrace workstations and object-oriented tools.

HP hopes the partnership will give it added punch in combating Sun Microsystems, Inc., its traditional rival in the battle for the hearts and wallets of the financial industry, noted Ruann Ernst, HP's director of financial services industry marketing.

—James Daly

Distributed systems

Delayed DME awaits Corba

By Elisabeth Horwitt
BOSTON

General availability of Distributed Management Environment (DME), the Open Software Foundation's (OSF) object-oriented platform for managing distributed systems, will be delayed until it incorporates the Common Object Request Broker Architecture (Corba), OSF director of DME programs Peter Shaw said last week.

Corba is an Object Management Group (OMG) standard that defines a common set of programming interfaces by which applications can handle the tasks, devices, functions and pieces of data involved in getting a job done. The OSF will incorporate management-specific features into Corba, as well as a "persistence" of objects that ensures that a device or function, once activated, does not disappear when the job is completed, Shaw said.

In addition, the OSF and the OMG need time to work with vendors to provide interoperability across different implementations of Corba, he said.

Shaw would not give a time frame for implementing Corba within DME. A spokesman at IBM, which is integrating Corba into DME, estimated that would occur in the second quarter of next year [CW, May 24].

On the other hand, DME Distributed Services, a set of basic management services for managing Distributed Computing Environment (DCE)-based systems, is on schedule to ship by year's end, Shaw said. The code is "functionally complete" for the services, which include software distribution, license management and services that enable a DME system to manage any PC running DCE.

Moving across nodes

The OSF has also "created a mechanism" that allows applications based on the services to manage systems via Transmission Control Protocol/Internet Protocol rather than DCE, Shaw said. What DCE provides, however, is an environment for distributing management applications and systems across multiple nodes.

Groupe Bull and Hewlett-Packard Co. are expected to finish co-developing the Network Management Option portion of the framework by the first quarter of 1994.

This piece incorporates the X/Open Co.'s Management Protocol, a common application programming interface (API) that enables network management applications to work with either Common Management Information Protocol- or Simple Network Management Protocol-compliant systems.

The OSF will enhance the interface with support for its object-oriented framework, Shaw said. But this means that until the framework is ready, users might as well purchase the existing API from other channels, he added.

DCE products ready, but users waiting

By Jean S. Bozman
BOSTON

A wave of products based on the Open Software Foundation's (OSF) Distributed Computing Environment (DCE) technology made an appearance at the OSF's interoperability showcase last week. However, users said they do not expect to run DCE applications in production until next year.

Users attending Challenge '93 seemed pleased with the demonstrated prototypes of distributed applications built on OSF technology. "The vendors cooperated, and an awful lot of this stuff actually worked," said Tony Carrato, a member of the OSF's end-user steering committee and a principal consultant at Mile-High Information Services, Inc. in Denver.

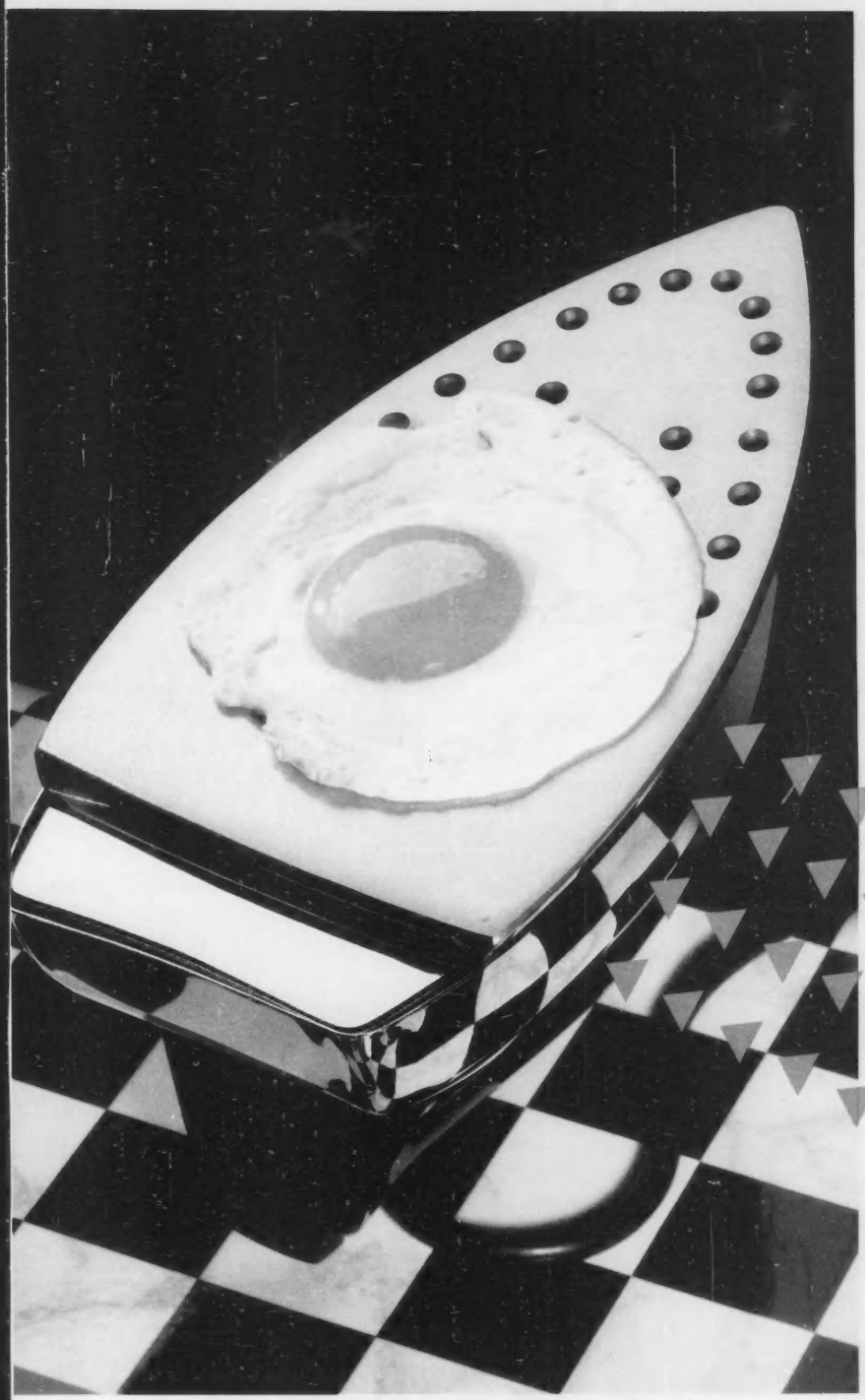
"It's taken just about two years from the time OSF first said DCE was shipping until we're finally going to get a critical mass of products," said Roy Schulte, a vice president at Gartner Group, Inc.'s Software Management Strategies service.

OSF President David Tory attributed the delay in part to "a long hiatus while the Motif technology was being productized by the vendors."

Users said they expect to have DCE applications in production by next year at the earliest. Several attendees said they are just getting started with OSF technology, monitoring the OSF/1 operating system, DCE technology and Distributed Management Environment networking technology before implementing it. These users said they would like to see more DCE tools for debugging and testing DCE applications before committing to use it in production.

"I'm waiting for all the pieces of DCE because I want to have a single, uniform naming space," said David Nessl, a systems programmer at the University of Florida's data center in Gainesville, Fla.

His site has been running the OSF's operating system, in the form of IBM's AIX for Enterprise Systems Architecture, for nearly a year. But distributed applications that link mainframe AIX files with distributed Unix workstation files will require DCE's naming services as well as its Distributed File System, Nessl said.



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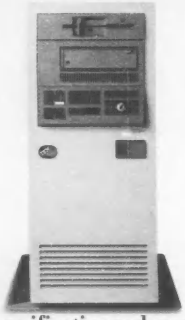

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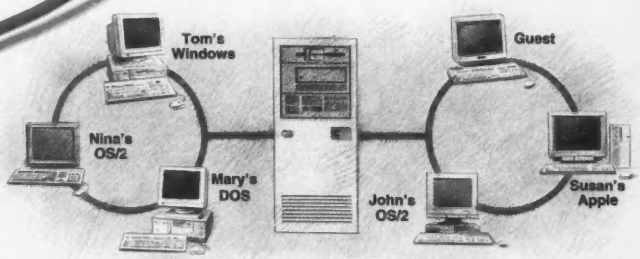

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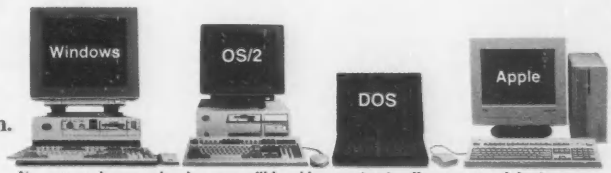

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Peer-to-peer networking

New VTAM brings users closer to APPN

By Elisabeth Horwitt
ARMONK, N.Y.

IBM last week started Systems Network Architecture (SNA) users on the long, rocky migration path to Advanced Peer-to-Peer Networking (APPN) — the vendor's next-generation enterprise network architecture — with the shipment of ACF/VTAM Version 4, Release 1. The software enables other APPN nodes to access IBM hosts over peer-to-peer links.

Users are still awaiting the ability to provide their widespread 3270-to-host networks with key APPN benefits such as the addition and deletion of devices without manual network table updates and automatic calculation of multihop routes, according to David Passmore, a vice president at Gartner Group, Inc., a consulting firm in Stamford, Conn.

VTAM 4.1 gives those benefits to links between hosts and OS/2, Application System/400, 6611 routers and other devices supporting APPN. However, the broad base of traditional terminal-to-host SNA networks will not be migratable to APPN until IBM ships VTAM 4.2, with its dependent LU server requester function, sometime next year. SNA terminals will be able to reach resources on an APPN network by accessing a VTAM 4.1 host over a traditional SNA link.

VTAM 4.1 works in combination with IBM's Network Control Program Version 3, Release 2, shipped in March, to convert an IBM host and front-end processor into an APPN Network Node, End Node or central directory server. The IBM host can then exchange information with other APPN nodes about its attached resources, keep track of resources across the network and cooperate with other nodes to route transmissions efficiently.

Canada Mortgage and Housing Corp. has been beta-testing VTAM 4.1 as a way to directly link its AS/400s to an IBM mainframe [CW, April 26]. The Ottawa firm lacks an extensive SNA subarea network, so it has "minimal interest" in the future VTAM 4.2's ability to replace 3270-to-host links with APPN, according to Ken Smith, systems software manager.

Of greater interest to the mortgage firm is a product now under development at IBM that will encapsulate 3270 within a LU6.2 connection, Smith said. This would allow users to access 3270 mainframe applications, "which will stick around for 10 years or more," from intelligent, graphics-based PC environments such as Microsoft Corp.'s Windows.

The information systems department could then "parcel all the handshaking and steps users need to go through to access a particular host application, as a series of screens," Smith said.

IBM will announce encapsulation of 3270 data streams within LU6.2, probably around the same time it announces VTAM 4.2, a company spokesman said. LU6.2 encapsulation will enable 3270 devices to transmit over APPN networks; however, the throughput will not be as good as over the "native APPN connections" that will be possible through the dependent LU server requester.

The new VTAM software also supports full-duplex, channel-based connections between two hosts, "so you can be reading over one channel and writing over another," an IBM spokesman said.

The basic monthly licensing charge for VTAM 4.1 ranges from $583 to $12,010, depending on CPU size.

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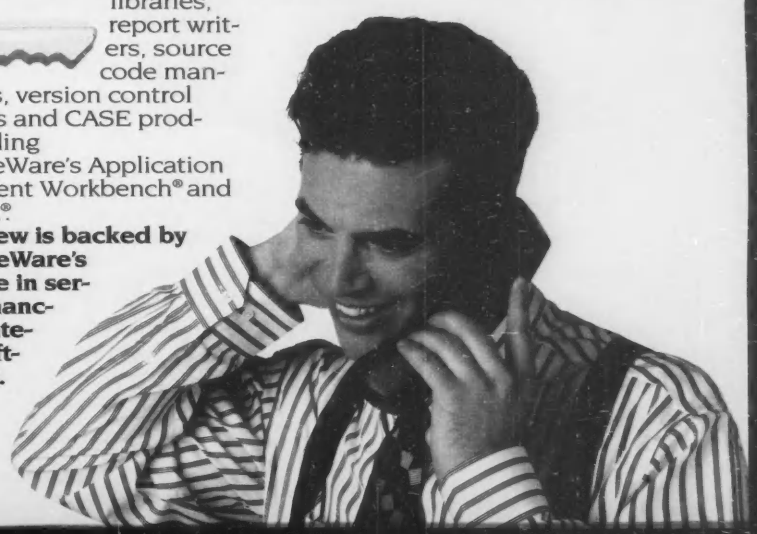

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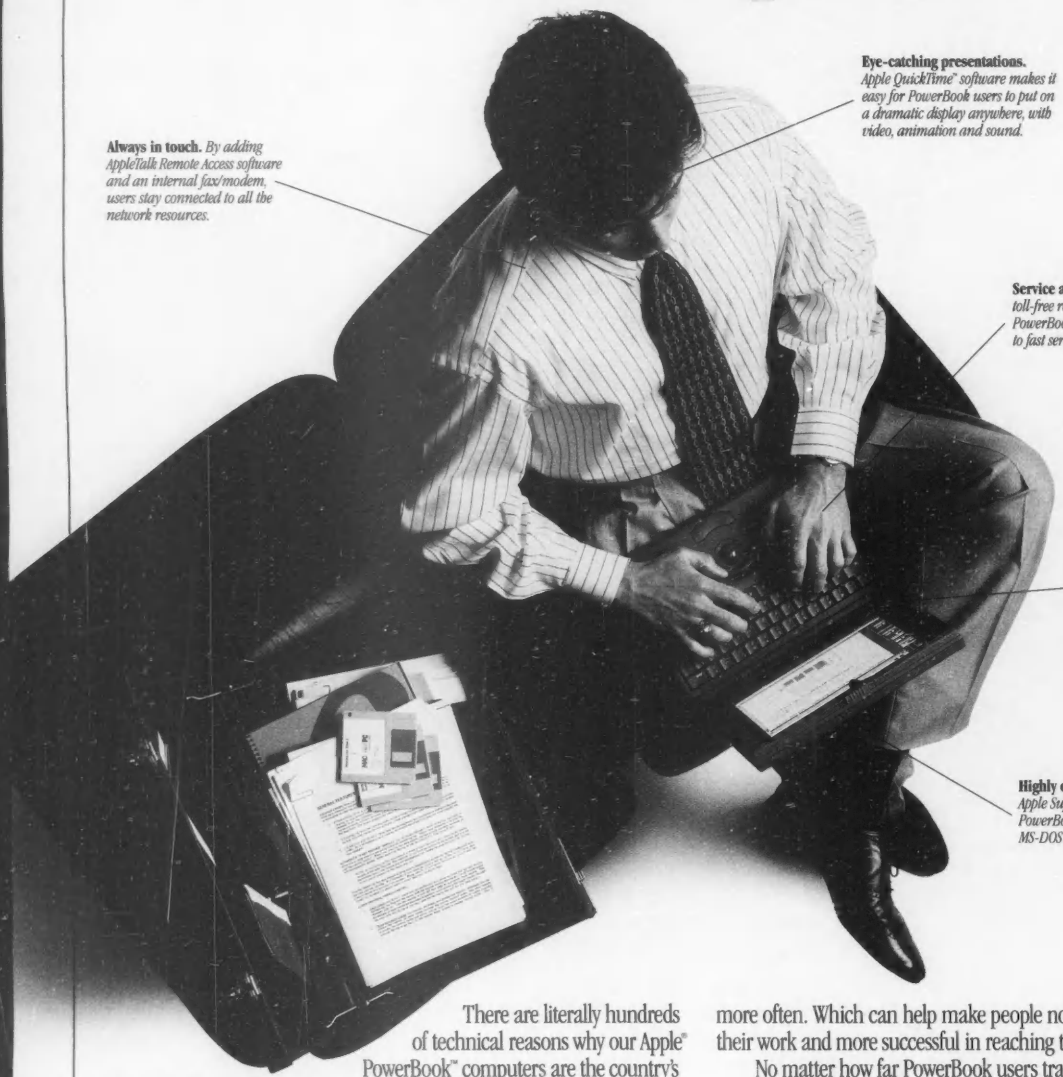

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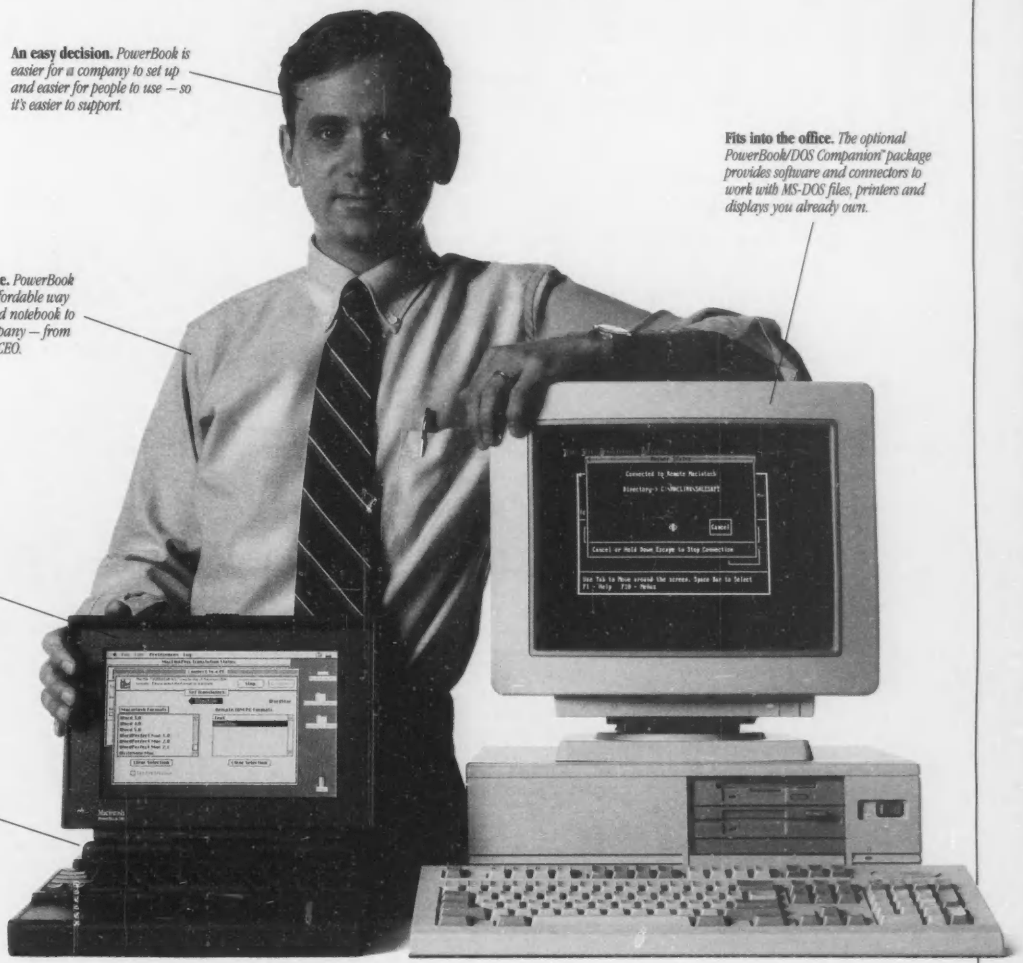

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An on-line gold mine?

As multimedia quest begins, pioneers scramble to see which technologies pan out

By Ellis Booker

Make way for the prospectors. In recent months, a caravan of computer, cable television, telephone and software companies have set off on a gold rush, announcing products and cross-industry alliances aimed at delivering multimedia services to a broad audience of subscribers.

Like the original gold rush, this movement, too, has taken on a life of its own, leaving the prospectors drunk with possibility but unmindful of precedent or nagging weaknesses in their strategy.

"The nature of capitalism is not to spend a lot of money understanding things.... Rather, you throw money at the wall and see what sticks," said Charles B. Kreitzberg, president of Cognetics Corp., an interactive design company in Princeton Junction, N.J.

"I don't think anybody has a clue exactly how this [market] will all shake out," he added.

Asked whether the current excitement around on-line multimedia services recalls the (ultimately disappointing) videotex craze of the late 1970s and '80s, some analysts bristled.

"The technology is far more powerful [per constant dollar], meaning there is at least the technological richness necessary for a successful user experience," explained Mitch Kapor, chairman of the Washington, D.C.-based Electronic Frontier Foundation and founder of Lotus Development Corp.

But even Kapor acknowledged that it is not clear what services and applications will drive the market. "At this point, most of the players are acting on faith, not certainty," he said.

SCOTT BALDWIN

More than movies

Kapor and Kreitzberg agreed that video-on-demand will be an important beginning application — although picking movies "interactively" is not generally what the proponents of on-line multimedia tout as their target application.

Kapor was also adamant that future "highly interactive" networks must be open, in both their technical design and their operating policies, if they are to achieve their full potential.

"Users and third-party developers should be able to determine the content and purposes of the network. If this is not the case, then the necessary conditions to permit the large-scale innovation will not be present," he said.

Whether media companies are conceptually prepared to allow this fluid definition of "content" is a serious question, according to Douglas Davis, author of the recently published book *The Five Myths of Television Power: Or, Why the Medium is Not the Message* (Simon & Schuster, Inc., $20).

"The market and viewers are far ahead of the people providing the services," said Davis, who added that the audience for the interactive services will be "so individuated and so 'hip' that you can't give them too much or too many choices."

These services will flop, Davis argued, if their providers "decide to offer multimedia on some kind of show biz level."

Viewer mistrust

To illustrate how historically reluctant networks have been about these issues, Davis cited study after study indicating that 1) viewers prefer "unmediated" news and 2) viewers hate and mistrust the way programming is aimed at them.

"There's a lot of reason to take a jaundiced view," Davis concluded, "not about the market but about the people who are serving it."

Kapor was a bit more charitable: "The 'killer apps' of the PC era, like [Lotus'] 1-2-3, emerged after the fact. You need a period of experimentation by garage innovators to come up with the one killer app in 10,000 efforts."

Davis, meanwhile, is optimistic that within five years — "probably sooner" — it will be commonplace to watch what is now called cable TV via a computer. The computer will become the repository for programs and information, organized and presented in an increasingly modular fashion so that users can manipulate them to suit their needs.

In May...

▶ **US West** made a $2.5 billion investment in **Time Warner, Inc.**'s entertainment business — the largest alliance yet between a regulated local telephone company and a cable TV operator. The two partners plan to offer interactive entertainment and information services to Time Warner's 7 million subscribers.

▶ Chicago-based **General Signal Corp.**, the world's largest supplier of cable and TV equipment, announced plans to integrate Intel Corp. and Microsoft Corp. technologies into its next-generation addressable cable TV converters. The future set-top box, which will feature Intel's 32-bit chips and General Signal's digital compression and graphics circuitry, will provide conventional cable services as well as interactive multimedia.

▶ **Tele-Communications, Inc.** (TCI), the nation's biggest cable TV operator, announced plans to deploy a $2 billion fiber-based nationwide network by 1996. Also, TCI, along with **Time Warner** and **Sega**, announced the Sega Channel, which will pilot an interactive games channel to several thousand homes this fall.

They want their MTV

Consumer demand for new forms of entertainment, more than any other factor, is fueling the evolution of North America's two fundamental networks: telephone and television.

"Both fundamental networks will handle two-way, switched wideband traffic well before the year 2000," The Insight Research Corp. in Livingston, N.J., projected in its latest report.

But Insight's analysis also argued that the two networks will operate separately through the year 2000, creating "an extensive level of overlapping, interconnecting and competing capabilities."

While phone companies will begin to provide some TV distribution, and cable TV operators may provide access to the switched phone network, Insight said it does not believe the two camps will fully compete with each other.

"We believe the two networks will compete to some degree, but not across all services," said Michael French, vice president at Insight. "The majority of their services will be unique." He said this separation hinges on technical matters and on "the massive infrastructure investments that have taken decades to put into place."

In addition, French said, current regulatory thinking encourages competition among phone and cable TV service providers, even if a confluence of networks becomes technically feasible.

— Ellis Booker

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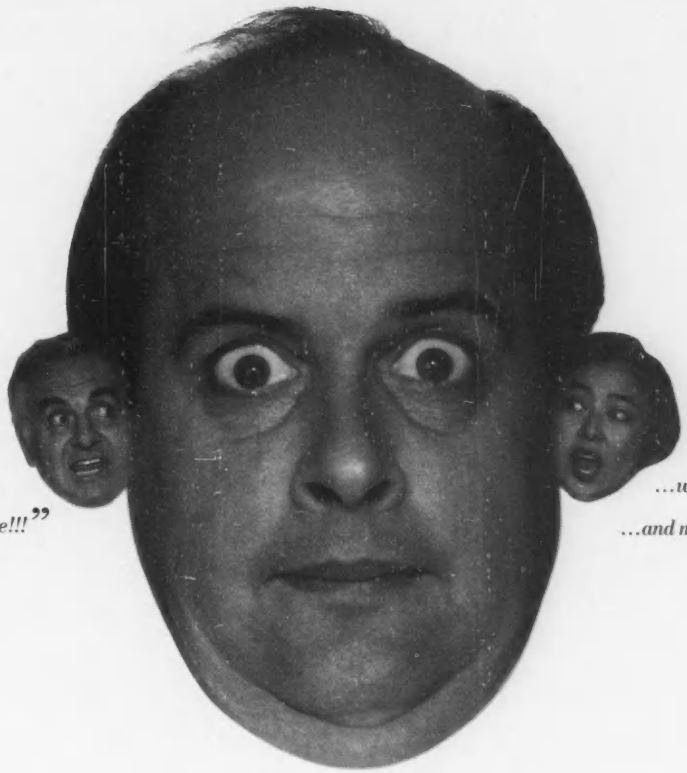

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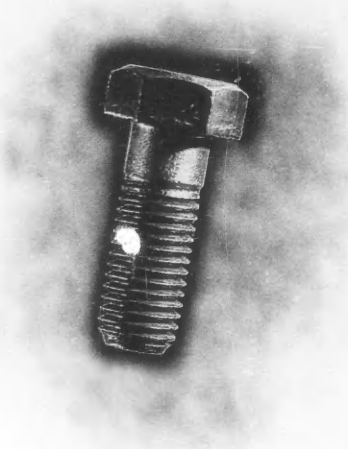

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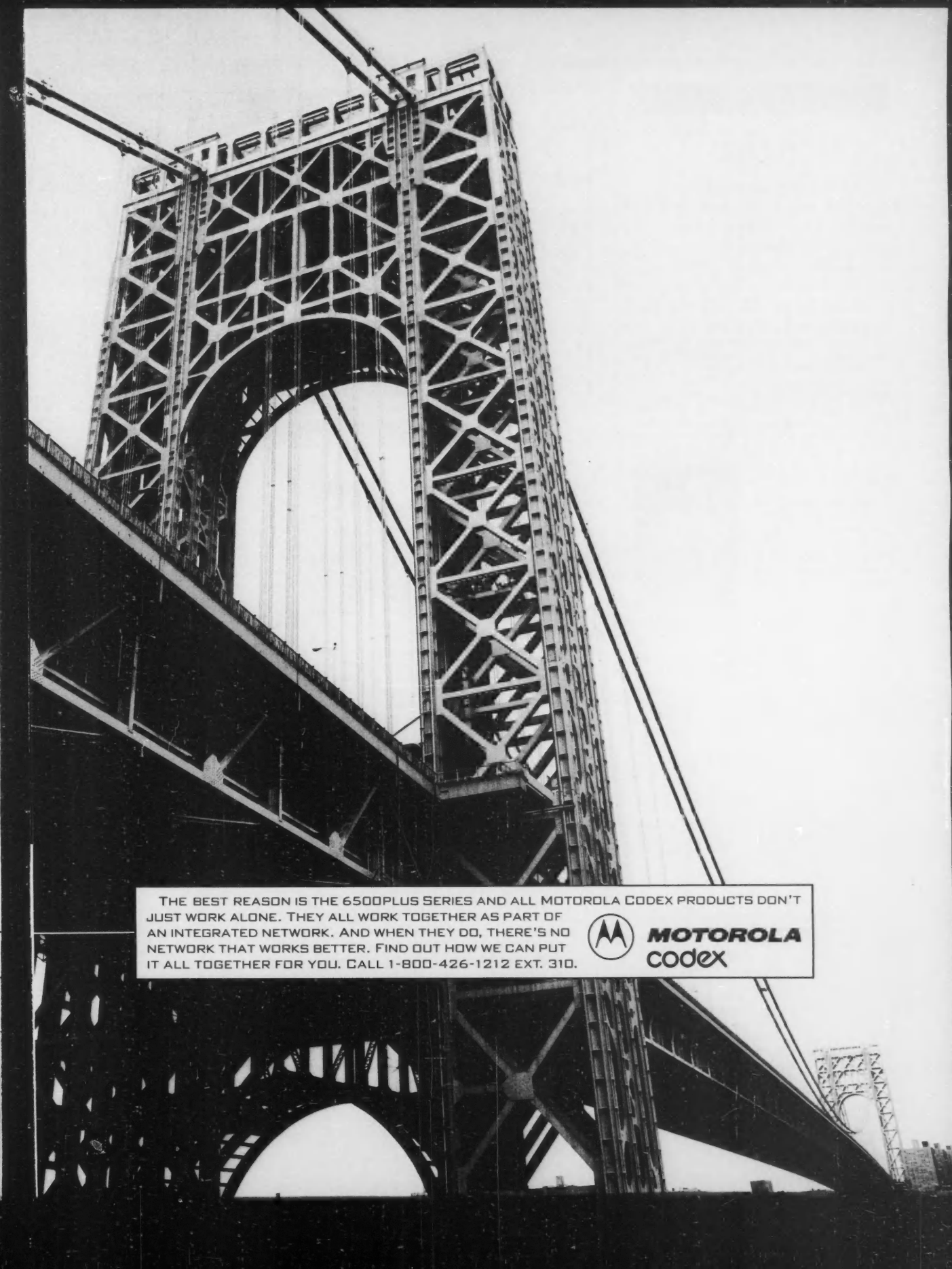

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Editorial

Doing lunch

What's wrong with this picture?

Last week at the giant Comdex technology extravaganza, I entered the usual mobbed lunch area and asked a stranger if he'd mind sharing his table with me. We soon started chatting, and I discovered he was on the horns of a dilemma.

He works at the IRS, and his group was six months into prototyping a customer service application. They were working with three almost-identical customer sites, using high-speed modems to dial into the sites and download data to the IRS systems. Pretty simple.

The problem was that at one of the sites, the modem would sometimes dial three, four, five or more times before getting a connection. There were no such problems at the other sites. They checked out the lines (OK) and checked out the modems (OK). They thought the problem might be in the data encryption software. But if so, why did things work with two sites and not with the third?

In all, a pretty vexing yet very pedestrian problem. So he came to Atlanta for some help. After all, some 1,000 vendors were there displaying some of the fanciest state-of-the-art information technology ever created, such as Pentium-based computers and Windows NT. Some of the technology was actually shipping.

For all his searching on the Comdex floor — amid the show barkers, the latest in multimedia, the vendors claiming their machines and software support vaporware operating systems, the 50-MHz PC screamers — he couldn't find anyone to help him out. It was just too ordinary a problem to which to apply such wonderful technology.

That's what's wrong with this picture.

❧❧❧❧❧❧❧

All of a sudden and almost in unison, some of the leading PC application vendors are hitting their stride in successfully porting their applications to Windows after some halting starts.

If you'll recall, vendors such as Lotus and WordPerfect cried foul when Microsoft announced a few years ago that it was switching development efforts from OS/2 to Windows. Shortly thereafter, Microsoft sported Windows versions of key applications such as word processing and spreadsheets and promptly sucked up the market for Windows apps. Competitors complained that Microsoft application teams were privy to information from the operating system side of the company — information not shared the same way with other companies.

The claim was never proved. But it's worth noting that the likes of Borland, Lotus and WordPerfect — the leading application companies in the MS-DOS world — have now hit the streets with sound Windows offerings, and all around the same time frame. Just a coincidence, or did they actually have the same disadvantages to overcome?

Bill Laberis

Bill Laberis, *Editor in chief*

Letters to the Editor

Word wealth

Regarding "Utility powers up text retrieval" [CW, April 26]: If these expenditures are correctly quoted, then nuclear generation cannot be economically viable. As a certified data processing professional, I am astounded by such a large budget for word processing.

The software that models and runs the Crystal River Unit 3 facility did not cost that much and requires far fewer resources to operate. Nancy Smith is processing words when she speaks of preemptive multitasking.

Christopher J. Clement
Palm Harbor, Fla.

Skip the Clipper

The article on the Clipper encryption chip ["Fed encryption plan gets mixed reaction," CW, May 10] was a good summary of the current debate. However, the government should not be in the business of marketing chips. This goes double when the chip is vital to privacy of information and triple when the government is seeking a monopoly position in the market.

Also, at least one aspect of the Clipper's security is very weak: A single code is used to extract the serial number from any Clipper chip. If this code is leaked or cracked, the first layer of security is permanently gone for Clippers.

The Clipper is simply the latest in a long series of governmental assaults on our privacy and liberties. We should not be taken in.

Gary D. McGath
Penacook, N.H.

For more on Clipper, see next page.

E-mail trail

"Coping with the deluge" [CW, May 17] is somewhat perplexing. Here we're in the "electronic age" and we're complaining about lack of disk space? I never remember hearing about the lack of file cabinet space when we were all sending paper memos to one another.

It seems a tad ironic that after we wean users from paper and get them to use electronic messaging, we start complaining that they are using it too much. This is not an electronic-mail problem; this is a communication problem.

If someone keeps sending me useless memos, I do one of two things: I either ignore and throw out everything from that person, or I gently tell him to be somewhat more particular about what is reasonable to send to me.

Let's not penalize people for doing exactly what we want them to do: to fully embrace the new technology and use it to the hilt.

Pete Roberts
Corte Madera, Calif.

Payback time

David Kelly's description of what constitutes valuable work and drudgery ["This is freedom from drudgery?" CW, May 17] shows that he's gotten the bone-numbing computer hell he deserves.

The notion that chopping firewood, drawing water and producing food is beneath us created the demand for "labor-saving" devices such as computers in the first place. Now we figure out that the "information" Dave's computer (and yours and mine) "generates" creates tons of monotonous grunt work and further alienates us from one another. In the meantime, Dave whines that he can't approach the weird altar of "creative thought" because he's too busy consulting on, of all things, client/server and systems integration!

Take a break, Dave. Go split some wood.

T.J. Smith
Spokane, Wash.

Page 2 blues

I wholeheartedly agree with Michael Somand [Letters to the editor, May 3]. Last year's Page 2 of *Computerworld* was the perfect "executive summary" of this journal, and today's version is almost as useful as a deck of Hollerith cards.

I peruse at least 20 industry publications a month and, although I usually prefer to turn every page of *Computerworld*, returning to the office after a one- or two-week absence presents me with a reading backlog that the old Page 2 greatly relieved.

Bring back the old Page 2!

Dave Schwee
Sugar Land, Texas

Ed: We will — soon.

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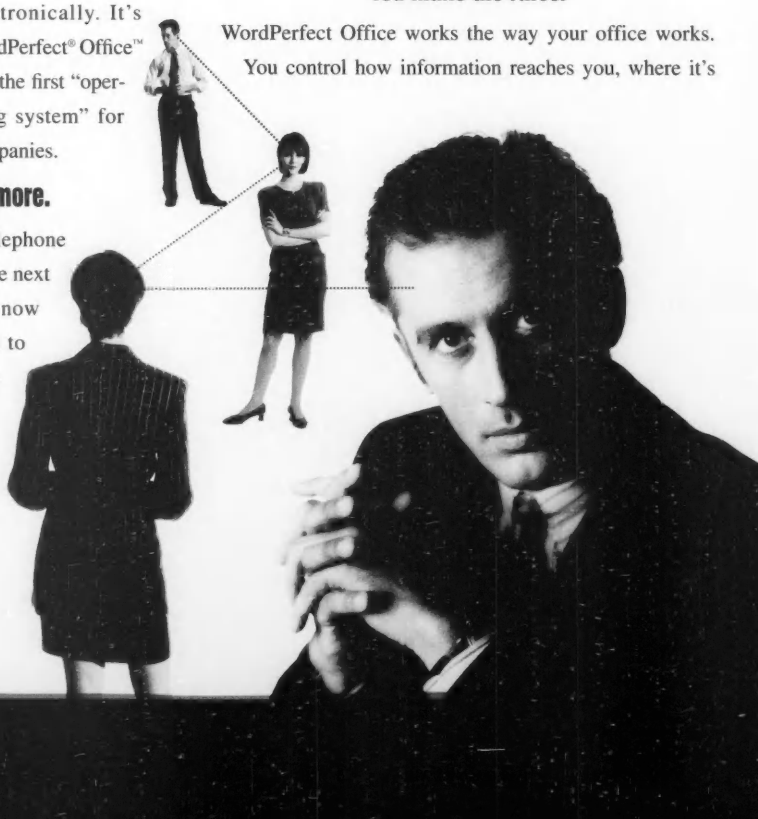

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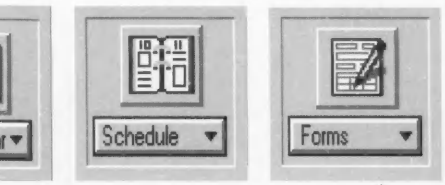

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Clipper gives Big Brother far too much power

Bruce Schneier

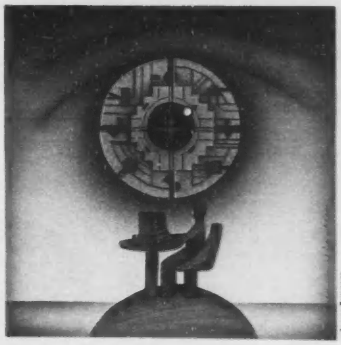
In April, the Clinton administration, cleaning up business left over from the Bush administration, introduced a cryptography initiative that gives government the ability to conduct electronic surveillance. The first fruit of this initiative is Clipper, a National Security Agency (NSA)-designed, tamper-resistant VLSI chip. The stated purpose of this chip is to secure telecommunications.

Clipper uses a classified encryption algorithm. Each Clipper chip has a special key, not needed for messages, that is used only to encrypt a copy of each user's message key. Anyone who knows the key can decrypt wiretapped communications protected with this chip. The claim is that only the government will know this key and will use it only when authorized to do so by a court.

There are numerous problems with Clipper: cryptographic problems, design problems, policy problems and philosophy problems.

Classifying the encryption algorithm is wrong. The NSA's refusal to allow public scrutiny of the algorithm gives ammunition to those who believe there is a secret "back door" that will permit the NSA to decrypt messages at will. The only way to assuage these fears is to allow academic cryptographers to examine the algorithm and publish their findings.

Clipper is also based on the Orwellian assumption that the government has a right to listen to private communications. It promotes



JAMES ENDICOTT

the power of government over the power of the individual. It assumes that the government is the good guy and private citizens are bad guys.

Why is the government now claiming there is something wrong with a private citizen trying to keep a secret from the government? This is not simply a little proposal of the government in some obscure area; it is a preemptive and unilateral attempt to usurp powers that previously belonged to the people. It also represents a fundamental shift in government policy, from a passive role of listening to an active role of regulating new technologies.

Clipper forces individuals to unconditionally trust that the government will respect our privacy. But consider this: The same law enforcement authorities that illegally tapped Martin Luther King Jr.'s phones can easily tap a phone protected with Clipper. During the past five years, local police authorities have been charged criminally or sued civilly in numerous jurisdictions for conducting illegal wiretaps.

As long as Clipper is optional, people who desire real privacy (both honest citizens and criminals) will use other encryption methods. However, because these methods will be secure from wiretapping, I expect the federal government to introduce legislation banning nonescrowed encryption and to reintroduce legislation forcing telephone-switch manufacturers to add circuitry to allow wiretapping.

By mandating a solution before allowing public discussion, the administration is overlooking some very important questions: How effective are wiretaps in law enforcement?

Why would any intelligent criminal use flawed encryption such as Clipper?

And, most importantly, is the ability to conduct wiretaps more important than the right to personal privacy?

Schneier is president of Counterpane Systems, a cryptography consulting firm in Oak Park, Ill. His book, *Applied Cryptography*, will be published by John Wiley & Sons in November.

PIAs: Agents of wireless anarchy

FIRE WATCH *by* John Gantz

Having just chaired a session at Comdex on the future of personal information appliances, or PIAs — things like the Sharp Wizard, the Hewlett-Packard 95LX palmtop and the Apple Newton — I can vouch for the excitement building in the industry for the concept of PIAs. Vendors are forming divisions around the concept. Wireless carriers are drooling at the thought of delivering signals to all these Dick Tracy devices. And storage vendors are trying to figure out how many megabytes they can get on a button-size disk.

That's what I can vouch for. What I can't vouch for is the ability of user firms to do anything constructive with these gizmos.

> Don't expect any help from vendors in managing unruly fleets of PIAs. They're too busy getting products out.

I think the market is inevitable — individuals will line up to buy, even if companies won't. But as you very well know, IS organizations are ill-equipped to deal with mobile computing in general, let alone wireless, handheld mobile computing.

These devices will enter your organizations like a swarm of gnats. The installed base for palmtops alone is already more than 4 million worldwide, and International Data Corp. is forecasting growth to 15 million in 1997. Add other PIA devices and you easily double that forecast.

Yikes! Just as the influx of PCs confounded IS managers in the early 1980s, PIAs will confound those of you managing systems and LANs in the 1990s. We're talking millions of addressable units demanding ad hoc, real-time access over shifting communications networks to corporate databases. We're also talking about addressable units consisting of proprietary hardware and software (necessary to get to wrist-watch size) and, therefore, built-in interoperability problems.

I expect the market to develop in the time-honored fashion. Vendors will offer proprietary products and fight for market share in hopes of becoming de facto standards. Users will decry the lack of standards but buy only for specific applications or functions because that's the only way to justify purchases in the short term. In about the third or fourth generation of devices, the need for application integration will push standards and interoperability — long after it's too late to build them into products in a rational way.

Once again, you'll be left holding the bag.

Sales forces automated with one kind of PIA will want to communicate with service engineers automated with another. Everyone will want to hook into the corporate E-mail network, which wasn't designed to support remote, wireless access.

You'll handle network incompatibilities with gateways, but before long, your gateways will have gateways. Device inventories, security and software licenses will be nearly impossible to control. Network management will be a joke. There'll be an element of humor in application development, too.

And don't expect any help from the vendors in managing unruly fleets of PIAs. They're too busy trying to keep venture capital or corporate development money flowing into their research and development sinkholes and getting products out to think about the problems you'll face supporting remote, mobile, wireless workers, devices and software.

So, for every ounce of PIAs you buy, order a similar amount of Tums.

Gantz is senior vice president at International Data Corp., where he is responsible for all research and consulting in desktop automation and workgroup and office computing.

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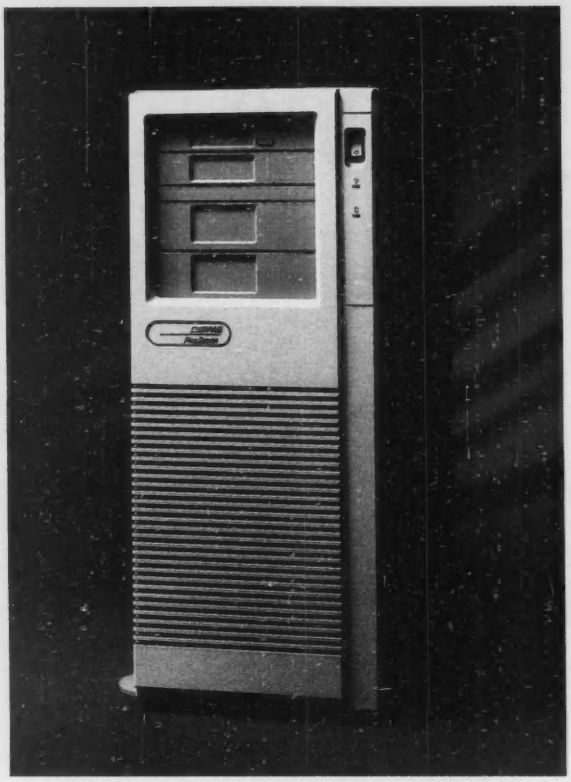

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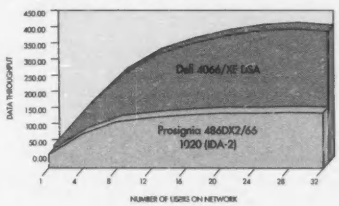

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Charles Babcock

Deferred payback

A first venture into client/server doesn't necessarily save money over a host-based system; in fact, it may cost more.

That at least is the conclusion of Forrester Research, a consultancy in Cambridge, Mass., that asked 25 large companies about their initial client/server investment.

Because each company was doing something different, Forrester staffers drew up a composite of the client/server systems they found — a system with five Novell NetWare servers and 140 1486 PCs. Then, for comparison, they mapped an equivalent Application System/400 host-based system with the same number of dumb terminals and PCs.

Researchers went to appropriate vendors and asked for standard prices to come up with hardware/software/network expenses. Conclusion: Implementing an application on a new PC LAN client/server system will cost slightly more than building from scratch on an AS/400.

Customer service trial

The typical application served by both of Forrester's model configurations was a customer service system meant to put better information into the hands of employees fielding customers' calls. This choice was not random. Half of those interviewed said they had picked customer service for their first client/server effort, citing reasons such as an ability to install call-recognition systems that route callers to familiar service personnel, easier retrieval of account data and immediate capture of problem descriptions.

To build and operate such a system for 140 users over four years costs $2,154,000 for the PC LAN version and $2,005,000 (or $149,000 less) for the AS/400 version.

Hardware and system software represented just over a quarter of the total expenditure for both configurations. Application development was costlier for the AS/400 system — just under $250,000 costlier on average — and took seven months longer. That advantage for client/server was offset, however, by support and maintenance costs, which were $248,000 heavier for the PC LAN system. Training likewise was less than half as much on the AS/400, reflecting the advantage of an established computer architecture.

So where is the big advantage of moving to PC LAN client/server?

One answer is that after the initial system is built, the network infrastructure has been put in place and there is more internal expertise to make a new system work. Hence, the cost of second, third and fourth systems gets chopped in half, said Forrester senior analyst Neil Hill.

Another is that client/server offers an organization a much more flexible computing resource, bringing data and applications closer to end users and putting tools in their hands to prototype their own applications. The rapid spread of powerful 486 PCs on desktops makes client/server systems more feasible.

Indeed, one is tempted to cast out one of the key assumptions made by Forrester for the purposes of its study: that both the client/server and AS/400 builders are starting from a blank slate.

While there are many AS/400s in use, most of them may be presumed to be heavily used. PCs and PC LANs, on the other hand, are frequently underused. What if one can make better use of existing infrastructure by building client/server applications? The system cost would then come down to a more reasonable level.

Savings will probably elude those going for the quick fix through client/server, but those who commit to this approach in the interest of creating more flexible, competitive systems will undoubtedly find that persistence pays.

Babcock is *Computerworld*'s technical editor. His MCI Mail address is 575-2737.

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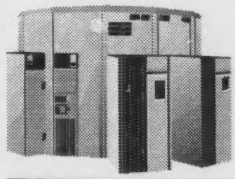

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Legent opens Windows to data center

Offers products to help manage, monitor end-user computing

By Gary H. Anthes
PHOENIX

■ Legent Corp. took another step out of the data center recently, unveiling five products for Microsoft Corp.'s Windows and enhancing other products for distributed computing.

Leading the way was a new product for downloading, displaying and analyzing the output of mainframe performance monitors. PC-based Paramount provides a common graphical user interface to mainframe-based tools, allowing users to combine on one screen and manipulate and correlate the output from multiple products from Legent and other vendors.

Paramount is based on the NaviGraph product licensed last year from Landmark Systems Corp. in Vienna, Va. Initially, it will accept feeds from Legent's Astex, NetSpy, LanSpy and Mics products and from Landmark's Tmon series of monitor products.

TCP/IP support

Legent also announced XCom for Windows and extended the XCom product line for file transfer and software distribution to support Transmission Control Protocol/Internet Protocol communications.

XCom, previously available only for IBM's Systems Network Architecture networks, can transfer data between any of more than 25 operating environments.

Appleton Papers, Inc. in Appleton, Wis., has been using the DOS version of XCom since January and recently bought the Windows version as well.

Terry Sweet, systems programmer, said XCom for Windows will be used for unattended nighttime file transfers from the mainframe to the PC. The objective is to allow end users to produce their own reports and ad hoc queries from local relational databases rather than from batch mainframe Cobol reports.

Sweet said the Windows version of XCom will allow him to run and monitor file transfers and 3270 emulation simultaneously. He said it is also less cumbersome for the novice user than is the DOS version.

Air Products and Chemicals, Inc. in Allentown, Pa., uses 10 Legent products and said it welcomes the Windows announcements.

"We've standardized on Windows and Ethernet, so it's important that our vendors come along," said H. William R. Townsend, manager of computing services operations. "We and Legent need to recognize a shifting away from a mainframe orientation to more of a multiplatform orientation."

Other announcements

Legent also rolled out the following products:

- **N-Vision for Windows**, which moves session management from the host to the workstation and offers simultaneous access to multiple applications, each appearing in its own window. It is based on software rather than emulator boards.
- **JobTrac PC**, which enables users to graphically build and forecast job schedules and make flowcharts.
- **Sar PC**, which allows Windows users to view, access and print host reports locally, offering users on-line viewing and on-site printing.

Steve Heitmeier, systems programmer at Steelcase, Inc. in Grand Rapids, Mich., said he recently acquired both the DOS and the Windows versions of Sar PC. He said the Windows version has the advantage of allowing users to select a font that shows all 132 report columns at once, even on a standard 80-column screen.

Pendulum swings back to IS

In speeches and technical sessions at its recent user conference, Legent pointed out that end users, impatient with the pace of activity in the glass house, have attempted in recent years to wrest the reins of information systems management from the data center manager.

But now, Legent argued, those same users are becoming overwhelmed by the accelerating pace of technology change and the lack of tools for managing distributed systems. The pendulum of IS control is now swinging back in favor of the traditional IS management professional, Legent said.

That idea seemed to strike a responsive chord among the 1,100 mostly mainframe-centric conference attendees.

"Users have gotten tired of doing backups, they are tired of having the cleaning crew knock their servers off-line, and they realize they are not equipped to handle disaster recovery, tape storage and fire protection," said H. William R. Townsend, who manages worldwide computer operations at the $3 billion Air Products and Chemicals.

Townsend said there is a bottom-up movement from users at his company to seek help from the central IS staff, something he said he welcomes but has no incremental budget to support. In response, Townsend said he has undertaken a broad array of cost-cutting and efficiency-improving measures — such as consolidating maintenance agreements, terminating little-used software licenses and bringing in automated system management aids — that are allowing him to tackle system management chores for remote users.

Townsend said IS managers should be more aggressive in reducing their own costs while simultaneously seizing the opportunity presented by the befuddled end user. "If they don't, they will be out of jobs in five years," he said. — *Gary H. Anthes*

Client/server

Bank enlists PCs, Macs to speed information retrieval

By James Daly
ATLANTA

If time is money, The Prudential Bank & Trust Co. had been spending lots of cash just sitting on its hands.

With the financial marketplace growing increasingly competitive and Prudential drawing up plans for expansion, obtaining crucial decision-making information quickly and easily became a critical business requirement for the $150 million financial services firm.

Previously, all of Prudential's core data processing, including the reporting function, was handled by outside vendors using a variety of IBM mainframes. Requests were sent directly to the vendor's information systems departments, which generated reports. The reports were printed at the bank — generally seven or more days after the initial request — and then forwarded to the business manager. If additional information was needed, he sent another report request.

"Users felt that they were running blind," said David Rowan, vice president of Prudential's information services.

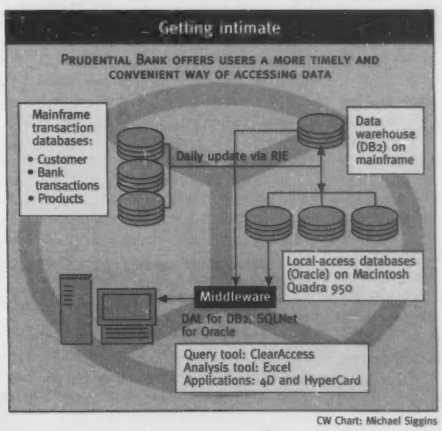
Something had to change, he said, and it needed to change fast. Rowan and his team gathered and began brainstorming about a client/server system. They knew they needed to achieve three simple objectives:

- Eliminate the reporting backlog by reducing the information delivery cycle from days to minutes.
- Give users a more flexible analysis capability, providing the ability to create "what-if" queries to the corporate database and drill down into the data to uncover new trends or correlations.
- Reduce IS operating costs. The hope was that users could perform their own reporting and data analysis without requiring too much IS involvement.

The data warehouse they created receives its data from existing transaction systems, Rowan said. Data on the mainframe is extracted on a nightly basis, transmitted using Remote Job Entry and stored in several departmental Oracle Corp. local-access databases running on Apple Computer, Inc. Macintosh Quadra 950 computers. Users access the data from a mix of Macintoshes and PCs.

Rowan said the bank also has access to transaction data on a DB2 database that is accessed via Apple's Data Access Language (DAL), which enables interactive data access to multiple database servers. Part of the

Bank, *page 40*



CW Chart: Michael Siggins

Security

No summer vacation for June viruses

By James Daly

■ June brings with it three nasty and destructive viruses that will eat you up faster than bugs at a barbecue.

One is Sub-Zero B, a variant of the well-known Jerusalem virus, that activates on June 6. It is a memory-resident generic file infector that hits .COM, .EXE, .SYS, BIN., .PIF and overlay files when they are executed.

Following infection, Sub-Zero truncates executed files on the last Friday of any subsequent month. On its activation date, it will attempt to format the hard disk.

Another ugly customer is the Kennedy virus, which is sometimes called Dead Kennedy or 333. It is a generic infector of .COM files, including COMMAND.COM. The virus activates on three important and sorrowful dates in the history of the Kennedy clan: June 6 (the assassination of Robert Kennedy in 1968); Nov. 18 (the death of patriarch Joseph Kennedy in 1969); and Nov. 22 (the assassination of President John F. Kennedy in 1963).

Upon activation, the virus displays the message: "Kennedy is dead — long live the Dead Kennedys," which relates to a former rock group from the San Francisco Bay area. These text strings can also be found in the code: "command.com," "The Dead Kennedys."

The Kennedy virus can cause several system problems that may result in a loss of data, including cross-linking of files, lost clusters and file allocation table errors.

The late bloomer of the bunch is Crazy Eddie, a memory-resident virus that activates on June 28 as well as on every Monday that falls on the 28th. On these dates it corrupts the system hard disk by overwriting it with characters from memory.

Crazy Eddie infects the hard disk partition table as well as COMMAND.COM, .COM and .EXE programs. The first time an infected program is executed, the virus infects the hard disk partition table. Once the partition table has been infected, Crazy Eddie will become memory-resident when the system is rebooted.

As with all viruses, these activation dates are for general awareness and are not exclusive. June is also peppered with many nondestructive nuisance viruses, according to officials at Fifth Generation Systems, Inc., a developer of utility and data security software in Baton Rouge, La. And remember to keep backing up those floppies.

WATCH

Viruses expected to activate in June

June 1,8,15,22,29 Ah, Kamasya, Demon	**June 12,19,26** Italian Pest, Phenome, Migram
June 2 Victor, Flip, Tormentor	**June 16** June 16th, Victor
June 4,11,18,25 Frere Jacques, Smack, Payday	**June 13** Sunday, Monxla
June 5 Italian Pest, Phenome Migram, Frog's Alley	**June 18** Skism, Form
June 6 Sunday, Jerusalem (Sub Zero B), Kennedy	**June 20,27** Sunday
June 7,14,21,28 Garfield, Exterminator, Badguy	**June 24** Form
June 9,16,23,30 Victor	**June 25** Sub Zero
June 10,20,30 Day 10	**June 28** Crazy Eddie

Source: FGS Virus Watch, Baton Rouge, La. CW Chart: Michael Siggins

Primavera offers Windows-based planner

By Michael Fitzgerald
BALA CYNWYD, PA.

It took four and a half years, but Primavera Systems, Inc. has released a version of its high-end project management program for Microsoft Corp.'s Windows environment.

Primavera Project Planner for Windows combines Project Planner 5.1 for MS-DOS and Primavera's hourly scheduler, Finest Hour 5.1. The Windows version can share data with the DOS-based product, according to company officials.

"We think it offers a chance for people to look at their existing information in a very different way," said Richard K. Faris, Primavera's vice president of technical development.

Under Windows, Primavera Project Planner — or P4 — lets users attach graphical objects to a variety of layouts and to display data in bar charts, histograms and other forms. Multiple schedules can also be compared on-screen at the same time, and users can reportedly attach live graphics to the file, such as a diagram or a picture.

Software of the rich and famous

Project planning software from Primavera has been used for a variety of high-profile projects, among them President Clinton's inauguration parade, the building of the Toronto Skydome and the new United Airlines terminal at Chicago's O'Hare International Airport.

Faris said Primavera also took advantage of Windows to create extensive on-line Help files; for example, an animated tutorial assists users. Primavera estimated that its current users can be up to speed on P4 within two hours and that newer users will be slowed only by the time it takes them to learn principles of project management.

OS/2 no more

The Windows version took a long time to develop in part because the company initially developed it for IBM's OS/2. Primavera abandoned that effort, along with plans to develop project software for the Unix market and for Digital Equipment Corp. VAX systems.

"Unix and VAX project management markets are moribund," Faris asserted. He added that with Unix vendors readying an application programming interface to let Windows applications run under Unix, "we may never have to port from Windows."

Primavera Project Planner for Windows requires a 486-based PC with at least 8M bytes of random-access memory. The software costs $4,000.

PCs to get voice functions

By Stephen P. Klett Jr.

Creative Labs, Inc., a leading vendor of PC sound and video boards, and Voice Processing Corp., a maker of speech recognition software, have teamed up to bring voice-enabled PCs into the home and business markets.

Creative Labs in Milpitas, Calif., has licensed Voice Processing's VProCommand technology to provide the software engine for its VoiceAssist speech-recognition system.

VoiceAssist allows Microsoft Corp. Windows users to execute voice-activated commands and includes 32 pretrained Windows commands to get users rolling. It supports an active vocabulary of 1,000 words for up to 30 applications for a total vocabulary of 30,000 words. VoiceAssist is shipping now with Creative Labs' Sound Blaster 16 audio expansion card for $279.

VProCommand is a desktop adaptation of Cambridge, Mass.-based Voice Processing's continuous voice-recognition technology for the telephony industry.

VoiceAssist is not meant to be the "Holy Grail of voice recognition systems," said Jeffrey Hill, vice president of product development at Voice Processing, "but rather an initial assault to get people used to the idea of talking to their computers."

Hill said Sound Blaster has an installed base of more than 3 million, and Creative Labs is shipping 120,000 cards a month, which represents a significant market for developers.

Based on Sound Blaster's widespread acceptance, analysts said, Creative Labs has the potential to do well with VoiceAssist. However, they questioned the practicality of VoiceAssist in the corporate marketplace because multimedia has yet to take off.

"In the short term, it's going to be a niche product," said Ted Julian, an analyst at International Data Corp. in Framingham, Mass. He said the product has good potential for disabled users and for users "who just want to do cool things with their PCs."

VoiceAssist supports DOS 3.3 and above, Windows 3.1 and OS/2 1.3 and above. A VoiceAssist application programming interface is available to developers of PC-based speech-recognition applications at no charge.

Bank enlists PCs

CONTINUED FROM PAGE 39

DAL software resides on the client while the rest resides on the server. Most Macintosh-to-host access in the past has been through terminal emulation. Prudential uses Fairfield Software, Inc.'s Clear Access to access the DB2 database.

Double-barreled gun

Management used a two-pronged approach to middleware, Rowan said. It chose DAL for connectivity to the DB2 data warehouse and Oracle's SQLNet to facilitate connectivity to the Oracle database. Once queries are constructed, they can be saved for later use or published on the network for others to use, he added.

Rowan noted that Acius, Inc.'s 4th Dimension and Microsoft Corp.'s Excel spreadsheet are important in manipulating the system because the user can freely analyze data and execute SQL queries to the data warehouse. "IS gives up micro control, but yields broader impact on the business," he added.

Six months after it was begun, the project was finished. Rowan said that users can now access data more directly, without the intervention of the IS department. The reporting backlog is a thing of the past.

Users can also examine the data in new ways, taking advantage of specialized reporting and analysis tools to strip away levels of data until they hit the mother lode of information they are looking for. Using the former system, data would need to be rekeyed into spreadsheets or other reporting tools to create a custom report.

In addition, the majority of the reporting function is handled by the users themselves, rather than by outside vendors. Estimated annual savings in reporting costs: $500,000.

Perhaps most importantly, Prudential is now ready to face the time-critical challenges of the financial market with a quick and muscular system. "Analysis was reduced from a normal one-week turnaround to under five minutes in some cases," Rowan said. "This is power."

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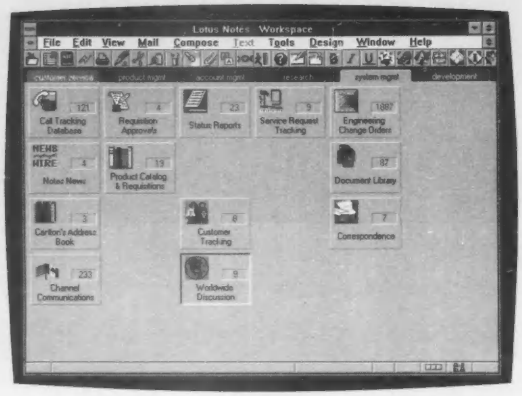
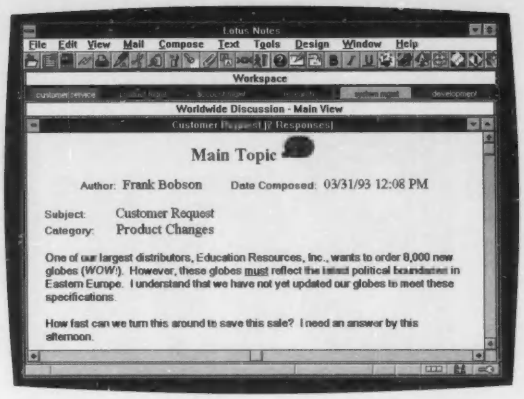
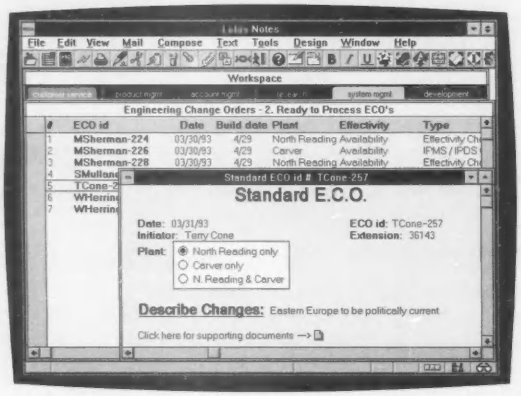


1. This is James' Notes desktop. He uses it to access information and work quickly with people in all departments to solve problems worldwide. James clicks on the Worldwide Discussion application to catch up with important company news. The SmartIcons across the top make it even easier to work in Notes.



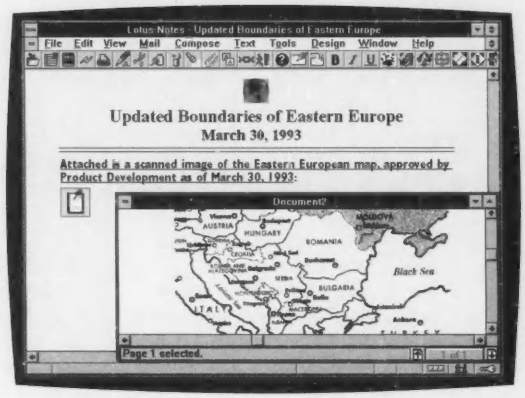
2.

The field rep in Texas is working on a request from a customer. But to make the sale the product, in this case a globe, has to be changed to reflect the most up-to-date countries and borders. And evidently time is critical. The competition must already be in there pitching.



5.

Once he has the information, he clicks on the Engineering Change Order application to request specific product changes from the plant in North Reading. He links the supporting Newswire information to the E.C.O. It will be easily viewed with a single click of a button.



6.

After lunch he opens a document from Ellen in product development, who has responded with the necessary changes, and scheduling information. The new art was scanned directly through Lotus Notes: Document Imaging from the art department. James approves the art for manufacturing.

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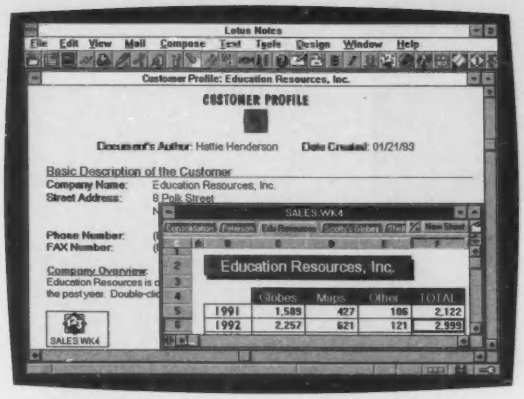
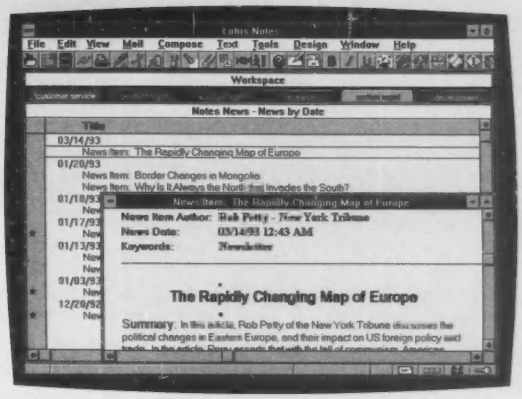
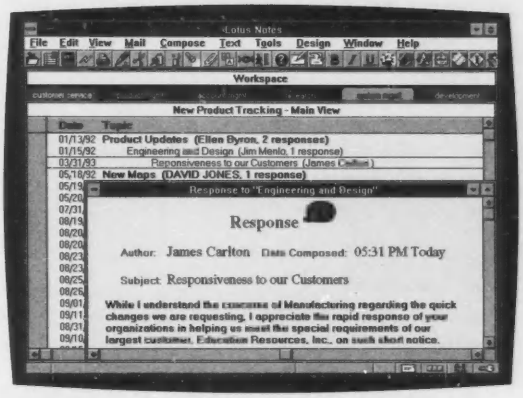


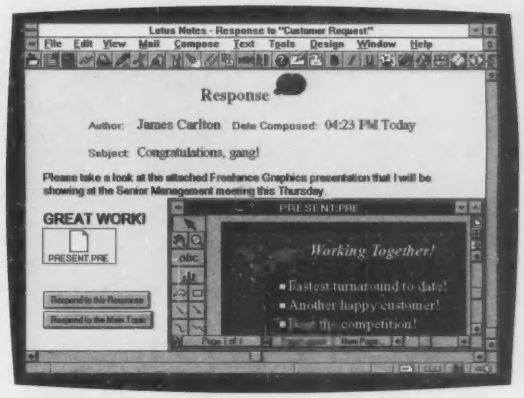
3. He clicks on the Customer Tracking application to learn more about this customer. The profile includes an attached 1-2-3® spreadsheet. He double clicks the icon to open the spreadsheet and finds that Education Resources is a very large customer that pays its bills.



4. James' next step is to click on the Newswire database for the most up-to-date report on precisely what geographical changes will have to be made on the new globe. And just how extensive they'll be.



7. On the Product Tracking application, all departments involved have confirmed that they can meet the schedule. However, they've cautioned James to be careful about rushing schedules in the future. James uses the Discussion database to acknowledge their comments and thank them for their efforts.



8. Wanting to record and promote the team's accomplishments, James puts together a presentation for senior management in Freelance Graphics. Then he posts the presentation in the Presentation database so everyone can see how the team rearranged the world to save a big account.

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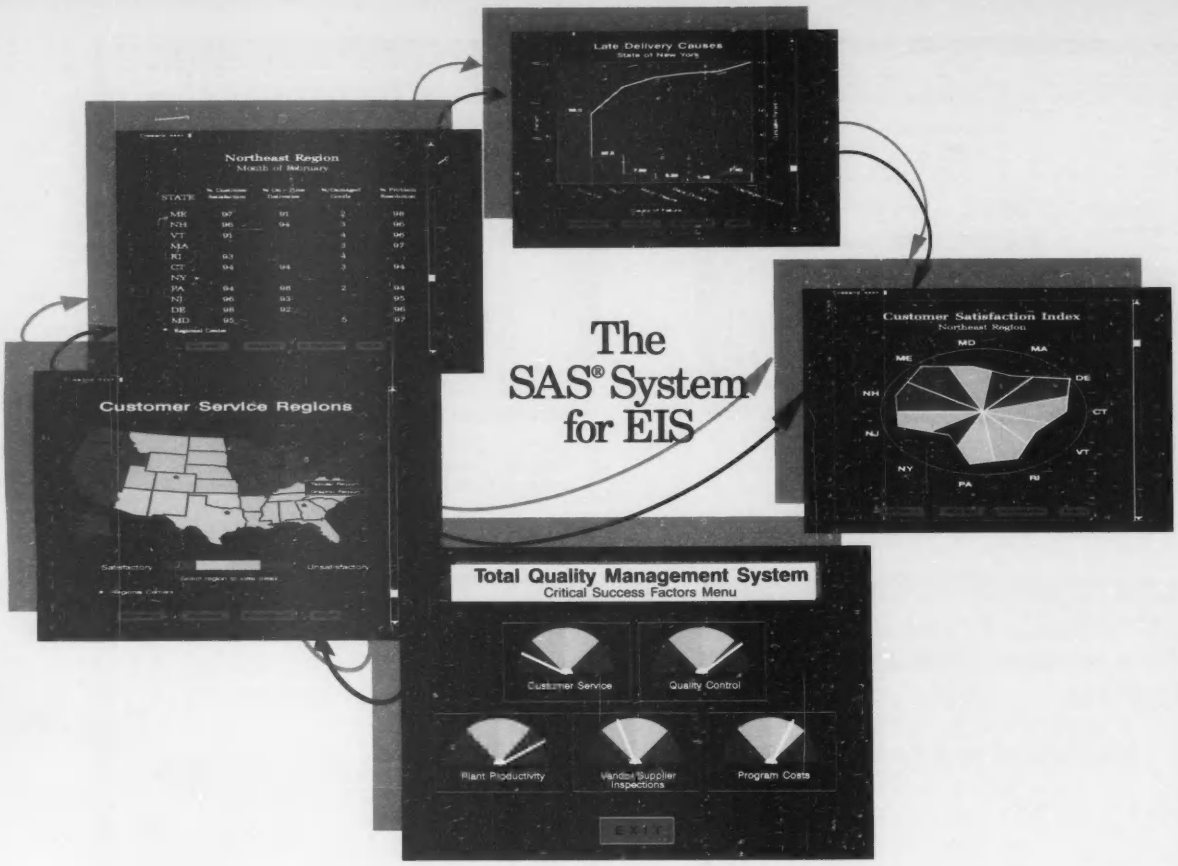

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Paul Gillin

NT great for some

Will Windows NT make the big time? It's becoming pretty obvious that, lacking serious bugs, it will be a slam-dunk winner on power users' desktops. Microsoft said 80% of the applications in the Sun Solaris catalog are already being ported to NT, and it pledged that the Top 200 Windows applications will run seamlessly on the new operating system. Can't argue with those numbers.

But what about the corporate server? Given Microsoft's spotty history there, I'd bet it's in for a long, slow haul. Consider these factors:

• Microsoft has had practically no success selling products that don't come out of a shrink-wrapped box. Its multiuser SQL Server database is an asterisk on the market share charts. LAN Manager was steamrolled by Novell's NetWare. Even Lotus is winning the E-mail wars. Complex products such as server operating systems require long sales cycles, relationship building and lots of negotiating.

Windows NT's scalability may be a paper tiger. Microsoft said corporate IS will flock to NT because it will run on everything from a PC to a mainframe. But scalable operating systems are nothing new and have never had a big competitive edge in the computer industry. VMS is scalable, but DEC never penetrated the mainframe data center or the desktop with it. Users haven't asked for mainframe NetWare or desktop MVS. Unix has made few inroads outside of workstations and minicomputers. So scalability has a lousy sales record.

What users want is a good set of application programming interfaces and middleware utilities that let them leverage their existing investments. Microsoft should concentrate on giving them that and working Windows NT into the computer mix over time. But don't expect users to throw their exist-

Gillin, *page 47*

DOS, Unix coexistence matures

DOS, Windows emulation just the beginning for running PC applications on Unix

By Christopher Lindquist

DOS and Microsoft Corp. Windows emulation software for Unix workstations has been around for years, but new approaches to running the thousands of PC applications under Unix are appearing.

There was a time when Unix users needing to run PC software had to procure an Intel Corp.-based machine and fill up more desk space. Then along came DOS and Windows emulation software that let them run their PC applications on the workstation — slowly. Now, as hardware performance and emulation software have improved, and with Windows applications flooding the market, the issue has turned more to *how* to run those applications.

closer look: DOS on workstations

Literal emulation is still the most common approach, with a "virtual DOS machine" being created in software for the application to run on. Such emulation is available in products from several companies, including Mountain View, Calif.-based Insignia Solutions, Inc. in SoftPC, as well as several Unix workstation and software vendors. These include SunSoft, Inc. in Solaris, Novell, Inc. in UnixWare and IBM in the RISC System/6000's AIX.

But while that process of emulation has improved with advances in hardware and software, it still has some limitations, according to users. One user familiar with several emulation packages said implementations of Insignia's SoftPC vary greatly from vendor to vendor and graphics performance can be slow. "But the biggest use of products like SoftPC is for those people who need to do both 'real' engineering and office automation stuff," he said. He added that users then find the native Unix office automation applications to be of lesser quality than their DOS and Windows counterparts. For those users, the trade-off in performance may be acceptable.

However, new approaches to running PC software, particularly Windows packages, on Unix are on the horizon. Sun Microsystems, Inc. has announced plans for the Windows Application Binary Interface (WABI), which would allow Windows applications to run as native Unix programs by "cloning" the Windows application programming interface (API) on Unix. Meanwhile, Microsoft has partnered with Insignia and granted it access to Windows source code, thereby giving the company an advantage in emulation and a head start in creating a counter-WABI technology.

Such API-level emulation would be faster than standard emulation, as it would no longer require the creation of an entire virtual PC. Instead, the Windows application would make API calls as necessary, and those would be mapped to Unix functions.

Sun's approach could have another effect — the wresting of some Windows API control from Microsoft. "If [Sun] can recreate the API, that has the effect of weakening Microsoft," said Judith Hurwitz, president of Hurwitz Consulting Group in Newton, Mass.

In theory, once Sun had sufficient users running Windows applications on WABI, Microsoft would be less likely to change the Windows API and risk offending an installed base of Windows product users.

Indeed, Sun Chief Executive Officer Scott McNealy has called for the creation of a Public Windows Interface that would limit some of Microsoft's control of the API.

But Sun has far to go, according to Microsoft. Paul Maritz, senior vice president of systems software at Microsoft, said Sun is underestimating the size of its endeavor. "It's expensive to be in the cloning business," he said.

Even if Sun or Insignia does succeed in allowing Windows software to run on Unix at the API level, that is not the end of the story. While the approach would be faster, it still would not be as fast as running a ground-up Unix application on Unix. Nor are the approaches likely to allow Windows applications to take full advantage of all the features of the various Unix operating systems, such as the graphics libraries supplied by Silicon Graphics, Inc.

Emulation software, *page 47*

Colliding worlds

DOS AND WINDOWS EMULATION PACKAGES ON UNIX WORKSTATIONS ELIMINATE THE NEED TO HAVE TWO MACHINES ON A USER'S DESK. SEVERAL APPROACHES EXIST:

Company	Product	How it works
Insignia Solutions, Inc. (Microsoft)	SoftPC and SoftPC/Windows	Available on several platforms, including Hewlett-Packard Co. and Next, Inc.
IBM	Personal Computer Simulator/6000	Runs DOS Version 3.3 programs on RISC System/6000 workstations
Sunsoft, Inc.	VP/IX and *WABI	Runs DOS applications under Unix System V

*Under development

VXM Technologies software divvies up chores among Unix, NT systems

By Elisabeth Horwitt
BOSTON

A small software vendor has designed a package to facilitate the distribution of downsized work loads across a mixed bag of Unix and Microsoft Corp. Windows NT systems.

VXM Technologies, Inc. recently announced Pax-2 Res, the newest member of its Soft Mainframe family for load-balancing batch jobs across distributed, networked systems.

The software family, which includes VXM's existing Balans product, can automatically allocate jobs to CPUs sitting idle on a network or balance the work load across a group of networked servers, said VXM President Franco Vitaliano.

Focus on fairness

Pax-2 Res implements these capabilities so all job requests are sent to a centralized server, which matches requests with available resources and enforces fairness. This procedure prevents one user from hogging all CPU resources with one huge job, Vitaliano said.

The centralized administration feature makes Pax-2 Res particularly suitable for companies that are downsizing applications from mainframes, Vitaliano said.

Such companies will likely want to "know where the scheduler is and where each resource is" for security and administrative purposes, he said. "They may not like the idea of having jobs anywhere and everywhere."

Previous VXM products distributed scheduling tasks across multiple systems.

These environments need not be modified to support Pax-2 Res.

Pax-2 Res reportedly can also distribute "make" files, which convert source code to binary format, across multiple machines. This cuts the time it takes to do major conversion jobs, according to Vitaliano.

Pax-2 Res is available for the following platforms: Sun Microsystems, Inc.'s Scalable Processor Architecture SunOS 4.1.X, IBM's RISC System/6000 AIX and Silicon Graphics, Inc.'s Iris. Versions for Hewlett-Packard Co.'s HP/UX and Digital Equipment Corp.'s Alpha running Windows NT are due soon. The software will run as is in these environments.

The product is priced at $6,900 for a 50-client node license and at $9,500 for an unlimited client site license.

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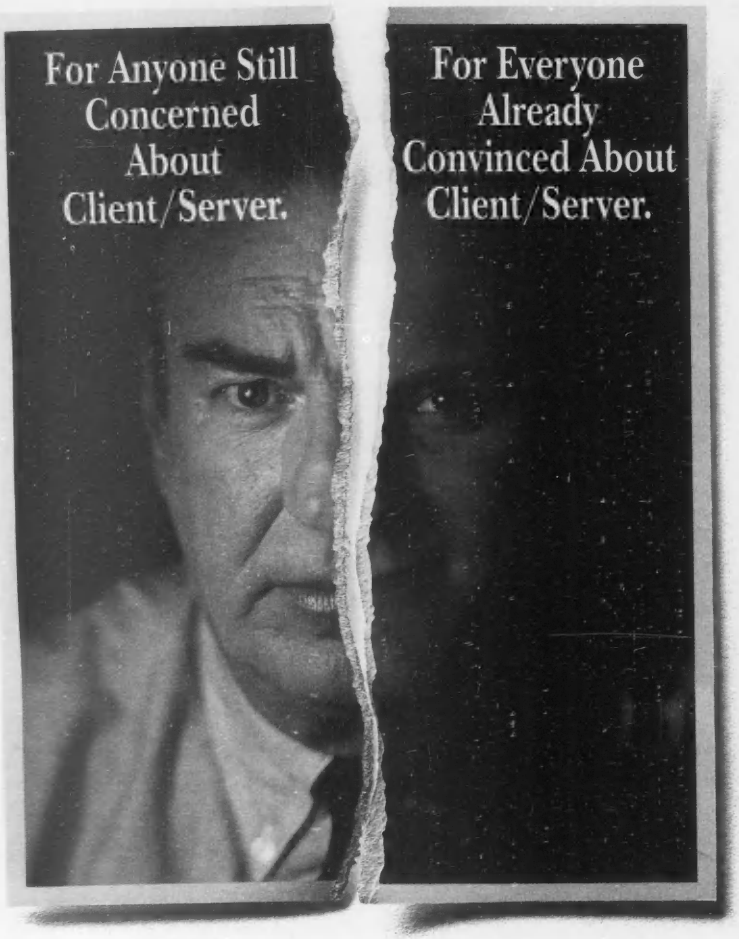

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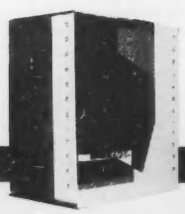

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Client/server

Server makers pushing mainframers to downsize

By Kim S. Nash

Server makers hope to entice wary mainframe users to downsize applications to networked servers by building in systems administration and other management features common in the big iron world.

New machines from Wyse Technology, Inc. and Auspex Systems, Inc., for example, sport improved on-line backup, capacity planning capabilities and other basics for moving large amounts of data to many users.

Observers — and even vendors — acknowledge that downsizing will not take hold in most shops until mainframe users are comfortable with the fact that systems management and other utilities to which they are accustomed will be ready for prime time in a client/server environment.

Sales across the server arena may have fallen short of expectations set a few years ago because potential users have been cautious about wholesale downsizing projects, they said.

"Customers don't want to move [applications off a mainframe] unless they know they will still have strong data management," said Dave Becker, manager of server product marketing at Wyse.

Even at sites where client/server architectures live, users have often elected to use off-the-shelf distributed applications that can accommodate mainframes as servers, such as human resources programs from PeopleSoft, Inc. and Dun & Bradstreet Software [CW, May 24].

To address users' concerns about the reliability and strength of servers as anchors for large distributed applications, Wyse, for example, recently built several security features typically found on multiprocessing servers into its new single-processor Decision 486SE model. Decision 486SE includes password-protected booting and chassis locks, the San Jose, Calif., company said.

On the high end, Auspex's NS 6000 NetServer lets users dedicate different CPUs for various functions. For example, the system supports up to four Ethernet processors, two file servers and three storage processors. Auspex, in Santa Clara, Calif., plans to deliver the NS 6000 late this year.

Preferably Pentium

Plymouth, Minn.-based Tricord Systems, Inc. is due to announce a line of servers running Intel Corp.'s Pentium processor this month, according to Mark Garver, vice president of corporate strategies. The PowerFrame ES5000 enterprise server, announced last month, rounds out the company's high-end line. Tricord is expected to receive "at least 100" Pentium chips from Intel this quarter and an undetermined number in the fourth quarter, Garver said.

Server highlights

Auspex's NS 6000 NetServer

- Certified for Oracle Corp.'s Oracle 6 and Oracle 7 databases.
- Runs SunSoft, Inc.'s Solaris operating system.
- Base price is $139,900, which includes system software and administration, capacity planning, memory rationing and backup utilities, among others.
- NS 5500 and NS 3000 users can upgrade to the new box for $20,000, plus trade-in.

Wyse's Decision 486SE

- Single-processor machine that rounds out the company's low end.
- Runs Novell, Inc.'s NetWare, UnixWare and The Santa Cruz Operation's SCO Unix.
- Prices range from $2,669 to $3,949, but actual prices may vary as resellers add software and hardware functions.

Emulation software

CONTINUED FROM PAGE 45

For that to occur, applications will have to be built not to be emulated but to actually be ported to various platforms, according to Jeff Elpern, vice president of sales and marketing at Machine Independent Software Corp. in San Francisco. Elpern's company is developing a code library for Windows developers that will allow them to write Windows code, then recompile it to run on Unix with little or no performance loss, letting the application compete on an equal footing with native Unix programs.

Elpern said this strategy will not allow current Windows applications to run unmodified on Unix, but he noted that several vendors, including KnowledgeWare, Inc., are beginning to employ cross-platform development strategies to save time and money when creating software for multiple environments.

Also, Elpern said, his company will be far from alone in the arena. Eventually, most software vendors will implement cross-platform development of some kind to stay competitive. "We think everybody will pursue a strategy in this category," he said. "These technologies will kill all Unix-only applications."

No substitutes for DOS

While users said the prospect of running Windows applications faster on their Unix workstations was appealing, they predicted that Sun's forthcoming WABI product would not reduce the need for DOS emulation.

"We are anxiously anticipating WABI," said Harry Perrin, vice president of investment systems at the Teachers Insurance Annuity Association in New York. "If it performs as advertised, we're very interested in using it."

Perrin said WABI is appealing because it was designed to let users run the latest releases of mainstream Windows programs, such as Lotus Development Corp.'s 1-2-3, without having to wait for a Unix port, which can take up to two years.

But, Perrin said, his unit needs to run several DOS applications for which there are no Unix equivalents, such as Software Publishing Corp.'s Harvard Graphics and Lotus' Freelance, as well as commercial real estate applications that do not have enough mass market appeal to merit a Unix port.

To run these applications, Teachers Insurance has roughly 120 licenses for Insignia's SoftPC DOS emulation software. Perrin said his unit was one of the first beta-test users of SoftPC and has been using it for more than two years with great success.

Perrin said he has yet to find a DOS application that cannot run on Unix via SoftPC.

The only real complaint that users at his unit have voiced, Perrin said, was that graphics-intensive applications tend to run too slowly. To solve this problem, Perrin upgraded those users who needed to run Freelance often to SPARCstation 2s.

Perrin is also evaluating Sun's version of SoftPC, called SunPC, which dramatically increases the performance of DOS applications when paired with Sun's Intel Corp. i486-based Sbus accelerator board. However, while the board offers great performance for a power user, Perrin said he does not anticipate "buying more than a handful of them due to their significant expense."

While Teachers Insurance is happy overall with the performance of SoftPC, Perrin said he would like to be able to log on to Novell NetWare servers through a DOS window on a Unix workstation.

— Stephen P. Klett Jr.

Gillin

CONTINUED FROM PAGE 45

ing stuff out just to achieve scalability.

- Novell will pull out all the stops to defend its position in LAN servers, and it will have massive industry support in doing so. Microsoft hopes to feast on the base of NetWare v3.11 with its Advanced Server version of NT, which will boast advanced security and auditing features, TCP/IP connectivity and available SNA services.

Furthermore, Microsoft claimed the base version of NT will have more networking built into it than NetWare v3.11. That sounds pretty attractive, but running up the steep slope of Novell market share will require more than just snazzy products. NetWare is nearly as entrenched in corporate America as DOS/Windows, and Novell has a lot more experience dealing with the networking needs of corporate IS managers.

Don't forget Novell's all-American image. In an industry that sees Microsoft's quest for dominance as an unnerving throwback to IBM's reign in the 1970s, Novell is winning a lot of fans just for being anti-Microsoft. That won't stop developers from writing for Windows NT if they can make money at it, but in an either/or decision, the question of which they're most comfortable with will.

For NT Advanced Server to displace NetWare, it must demonstrate complete compatibility with the Novell product while offering significant added value. Given that NetWare is a moving target and Novell has its own enterprisewide irons in the fire, that's going to be a tricky task for Microsoft. Not impossible, but difficult.

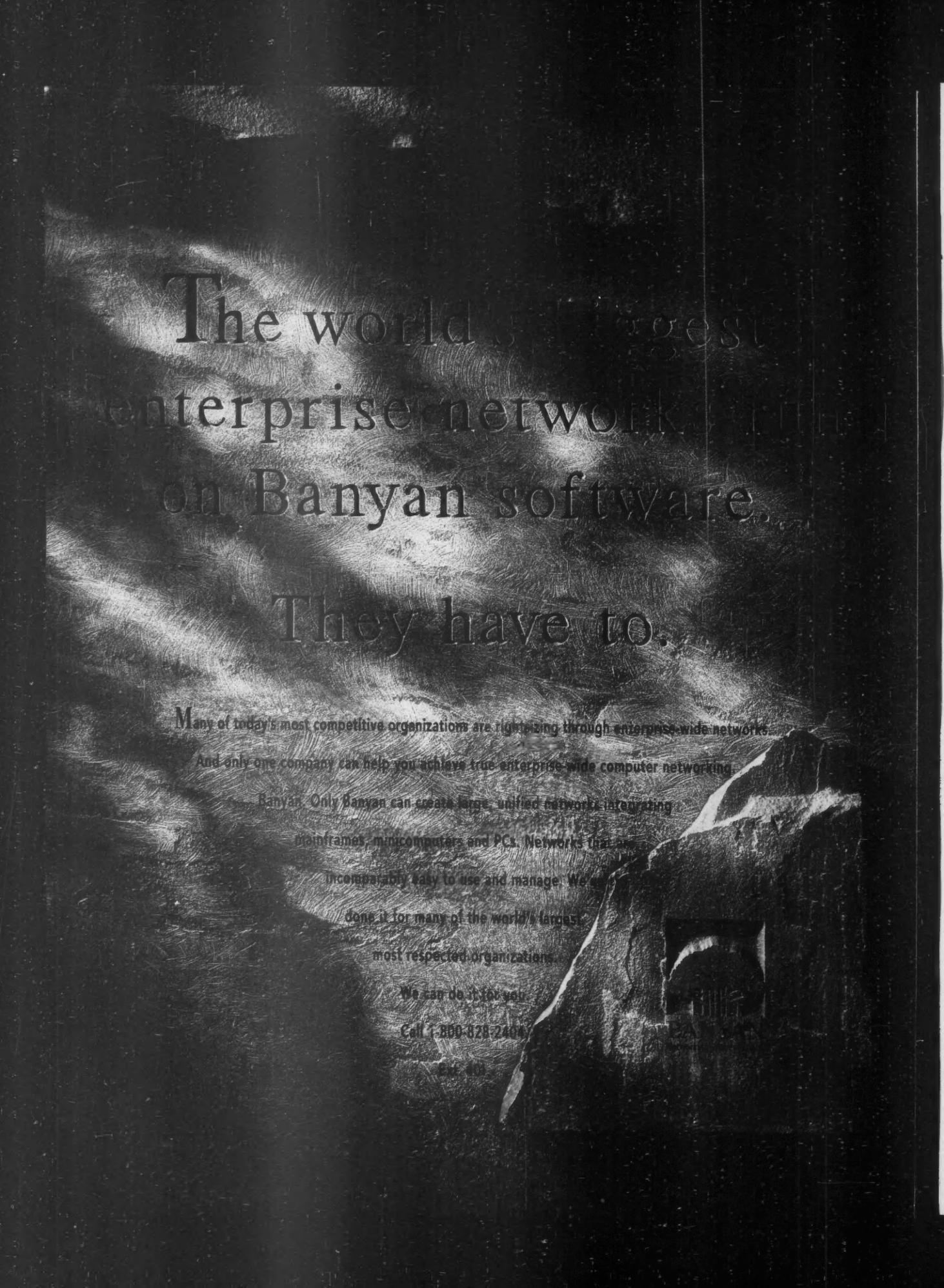
- Microsoft still has a lot of work to do to gain support from the major workstation and data center hardware vendors. Those vendors that have endorsed NT or are likely to endorse it — such as DEC, Sequent and HP — are hedging their bets by off-setting Unix strategies. Sun and IBM will give in only if their backs are to the wall. So the mid-range and large systems markets are no slam dunk for Microsoft.

Meanwhile, the Unix community is at last coming together. Microsoft executives dismiss the Common Open Software Environment initiative as being too little too late, but don't be so sure. Unix has lots of loyal adherents and a large installed base. Novell's purchase of Unix System Laboratories has brought needed stability to the Unix community. This market will take years to settle down, testing every ounce of Microsoft's vaunted patience.

NT will be a huge success on the high-end Intel desktop and will move quickly into the mainstream during the next three years as hardware price/performance improves. If the code is clean and the applications come, it will relegate OS/2 to the low-end desktop and halt any momentum Unix has built in the Intel market. It'll probably hold its own in the RISC workstation business, too.

But get ready for a wild ride in the enterprise where all bets are off and the only sure thing is that users will have more choices than ever by this time next year.

Gillin is *Computerworld*'s executive editor. His MCI Mail address is 575-4120.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E-mail from the top down

E-mail designed for both mainframes and LANs eases user frustrations

By Lynda Radosevich

■ While electronic mail for networked PCs is the rage, using it on an enterprise level poses some daunting managerial challenges for mixed mainframe/local-area network shops.

These include making sure the user directories on different networks are available to each population of users and keeping the directories updated. In addition, information systems departments have to drum up the expertise required to maintain different E-mail systems and the gateways that connect LAN- and host-based mail.

Some companies have circumvented these headaches with a top-down approach, which involves implementing an E-mail system that runs on large systems and desktop computers alike.

For example, some are using a mainframe-based E-mail package from Fischer International Systems Corp. in Naples, Fla. Called Emc2/TAO, or Electronic Mail Communication Center/Totally Automated Office, the system houses the E-mail server on an IBM mainframe or Application System/400 and supports clients on mainframes, AS/400s or PCs.

Mix and match

Users can adopt any combination of client and server platforms, a mix-and-match configuration that enticed some users, including Consolidated Rail Corp. (Conrail) and Super Value, Inc., away from LAN-based E-mail.

For example, Rich Kenney, a self-proclaimed PC bigot and manager of office systems at Conrail in Philadelphia, was charged last year with updating a homegrown E-mail system based on IBM's CICS and designing a method to move electronic documents around the company. CICS is a transaction-oriented database/data communications system for mainframes.

Splitting combination

Fischer's Emc2/TAO splits E-mail into server and client software. Server software runs on IBM mainframes (MVS, VM and VSE), the AS/400 or OS/2-based PCs. Client software runs on mainframe platforms (under CICS, CMS and VTAM), the AS/400 and MS-DOS- or Windows-based PCs. Client software for Apple System 7, various Unix platforms and OS/2 are expected to ship next quarter, according to Fischer.

In the midst of this project, Conrail, which has 25,000 employees and roughly 7,000 E-mail users, was integrating LANs into its company-wide computing environment. At the time, "I wasn't impressed with mainframe companies' grasp of PC concepts," Kenney said.

Goodbye to gateways

However, after looking at Lotus Development Corp.'s CC:Mail and Microsoft Corp.'s LAN-based package, Kenney and a company advisory group chose Fischer's Emc2/TAO because it allows the railway's PC networks running Novell, Inc. NetWare to exchange mail with the IBM 3090-600 mainframe without gateways. More importantly, resources such as the directory database and fax gateways are centralized on the mainframe but are accessible to all platforms, Kenney said.

"This helps keep the architecture simple and our administrative costs down," he noted. Additionally, the Fischer software included calendaring and scheduling across the different hardware platforms.

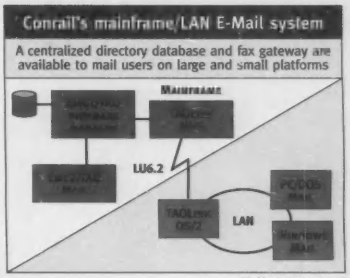
The biggest challenge in installing the Fischer system was replicating specialized functions, such as customized print commands, that had been developed in-house, Kenney said.

Now the railroad is in the process of upgrading PCs to the Microsoft Windows operating environment. Kenney said the Windows-based Emc2/TAO client software is helping employees make the transition to Windows' graphical interface because "the application is familiar and some of the keystrokes are the same."

However, the mainframe might not host the company's E-mail system indefinitely. "We're evaluating every piece of the IS structure. The mainframe will be the E-mail server and host the directory database now, but that may change over time," Kenney said.

For Super Value, a grocery wholesaler based in Minneapolis, the objective of installing a new E-mail system last year was to supplement electronic data interchange systems and allow departments to send mail and faxes both internally and to other organizations.

Super Value has 35 distribution centers that service 5,000 supermarkets throughout the country. The grocer picked Fischer's mainframe-based E-mail server largely because all the employees already had 3270 terminals or PC emulation software. This meant the company could launch its new E-mail system without shelling out money for new hardware platforms.



CW Chart: Nancy Kowal

"We got into strategic E-mail applications for around $40,000," said Bernie Grutsch, director of buying systems and inventory control. "Plus we liked the single directory" feature. Emc2/TAO also has LAN-like features such as spell-checking and file foldering. Additionally, it has plug-in fax functionality, Grutsch said.

Super Value is using the mail system for critical applications such as automatically updating 700 remote buyers each day on pricing for commodities. Next, the wholesaler plans to add work-flow capabilities to E-mail "for all those forms that require sequential review," Grutsch added. The company is evaluating work-flow software from Fischer.

"Originally, I saw mainframe E-mail as a short-term fix, but now I don't know," said Grutsch, who added that he is surprised at the options available on the mainframe server platform.

Dropped Series/1 users turn to third parties to fill void

By Elisabeth Horwitt

When IBM quit manufacturing and supporting its Series/1 communications controller, the company largely left it up to users to figure out a migration path to another platform.

The main challenge facing users in this endeavor is that the Series/1 has no real equivalent on the market today — from IBM or any other company, said Steve J. Jackowski, president of systems integrator and software vendor Syzygy Communications, Inc. in Scotts Valley, Calif.

This is because IBM designed the Series/1 as a specialized computer system equally suitable for reading plant floor process instrumentation data, controlling conveyor lines or acting as a communications controller for automated teller machines. But today's users are not looking for yet another proprietary box, no matter how specialized, to replace the Series/1.

"Even if IBM had said, 'Here's a replacement [hardware platform],' people might not have bought it.... They wanted a more open system," said Barry Pearlman, a vice president at VisaNet Engineering, a division of Visa International, Inc. in San Francisco.

Helping hand

Fortunately, most corporations can now find a third-party product or service to meet their Series/1 migration needs. Participating vendors include Cipher Systems, Inc. in North Plains, Ore., Computer Information Enterprises in Tustin, Calif., and DataTrend, Inc. in Eden Prairie, Minn.

Companies' needs vary widely, depending on the complexity of applications running on the communications processors, the Series/1 operating system in use and financial and programming resources.

In some ways, the simplest strategy is to rewrite applications to the platform of choice, which is what Visa did. Luckily, the company was already using both Series/1s and IBM PC ATs for access points that enable banks and other customers to reach VisaNet settlement and authorization services, Pearlman said. The company just moved to IBM Personal System/2s.

"We've been very fortunate"

Series/1, *page 52*

R.I.P.

IBM shipped more than 100,000 Series/1 machines worldwide between 1976 and July 1991, when it stopped manufacturing the product. IBM estimates that approximately half of those are still installed.

For minds that cover a lot of ground, we present a more advanced way to travel. The new IBM ThinkPad* 720s. Notebooks so graceful, their sleek design and slim profile almost defy their sheer might. Memory is expandable to 16MB. Removable hard disks up to 160MB are available. And rocket-fast IBM 486SLC2 50/25 MHz processors speed things along, so you work in a virtually wait-less state.

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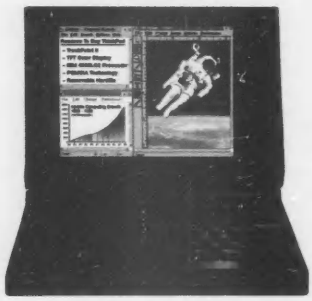

Everything about the 720 and 720C was designed to close the chasm between mind and machine. The rubberized red button on the keyboard is the exclusive TrackPoint™ II pointing device. Just a touch sends the cursor where you want it to go. The 720C draws you in even more with a dazzling 10.4″ color, active-matrix, TFT display—the largest color notebook display out there.

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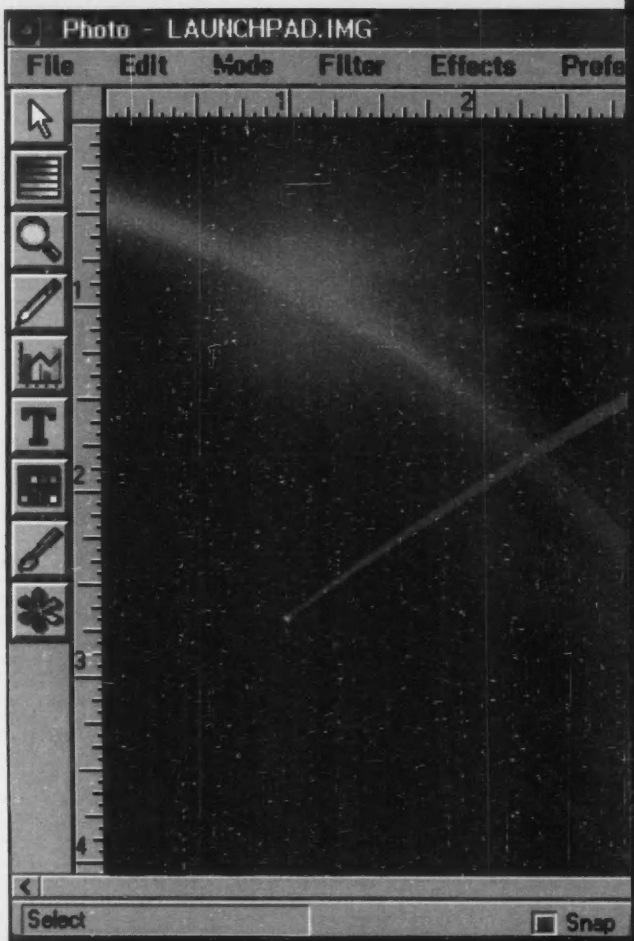

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PCMCIA Support Release 2.01	(1) Type III or (2) Type IIs	(1) Type III or (2) Type IIs
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Series/1 users turn to third parties

CONTINUED FROM PAGE 49

that moving over to PC ATs and then to PS/2s caused very little impact to the network or the host systems, Pearlman said. "We had a dual configuration for reliability, so we could pop in a PS/2, make sure it was working, then pop out the Series/1."

However, this strategy is not feasible for companies whose Series/1s run large, complex applications. Payless Drug Stores in Wilsonville, Ore., for example, "briefly considered rewriting our applications, but we're talking hundreds of thousands of lines of code and umpteen thousands of dollars," said Gary Smith, a systems analyst.

Payless instead hired Cipher Systems to port Series/1 applications to Intel Corp. 80286- and 80386-based PC platforms, using an enhanced version of Computer Information Enterprises' Hummingbird. Hummingbird is a portable version of the Series/1 operating system, EDX, which runs on standard PC platforms, including IBM PC clones.

Cipher offers HBX, an enhanced version of Hummingbird that runs on Intel 80386 and I486 platforms, as well as on Micro Channel Architecture-based PCs.

Portable EDX versions enable users to move their applications to standard PC platforms without the expense of code conversion or rewriting of applications.

However, some companies may avoid porting operating systems because it requires their information systems departments to continue supporting a proprietary environment. "Programmers [for the Series/1] are scarce," one user said.

Also, some 30% of Series/1 installations use proprietary operating systems that IBM introduced prior to EDX and that are not portable to standard PC platforms, a Cipher spokesman noted.

For such companies, DataTrend offers two options. One is conversion of Event Driven Language (EDL), the proprietary Series/1 language, to C, running on AIX. The cost is $500 to $5,000 per CPU, depending on the complexity and size of the code. The service takes three to six months.

"If the applications are doing a good job, it's better to convert, because otherwise you have to retrain people on producing new reports and screens," DataTrend President Mark Waldrep said.

A slightly less expensive migration option from DataTrend is having the vendor translate only the "convertible" aspects of EDL — about 70% to 80% of the source code — and leaving it up to internal programmers to handle those parts of the code that do not have a one-to-one correlation with C.

DataTrend also provides software that enables an IBM RISC System/6000 running AIX or an IBM PS/2 running OS/2 to emulate a Series/1. This option is less expensive and time-consuming than conversion but does require the user to continue maintaining the Series/1 proprietary programming language and applications indefinitely.

Series/1 uses

What people are doing with their old Series/1s:

- **Barry Pearlman**, vice president, VisaNet Engineering: "They're making breakwaters out of them; we're recycling the cabinets to repackage PS/2s. They have some value, but it's marginal."
- **Jeff Schoff**, manager of store systems, Giant Food, Inc.: "We're recycling some in our warehouses for attendance [tracking] until we catch up" to those sites with an ongoing strategy to convert to RS/6000s running C.
- **Gary Smith**, systems analyst, Payless Drug Stores: "Anyone in the market for a boat anchor?

SERIES/1

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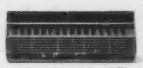

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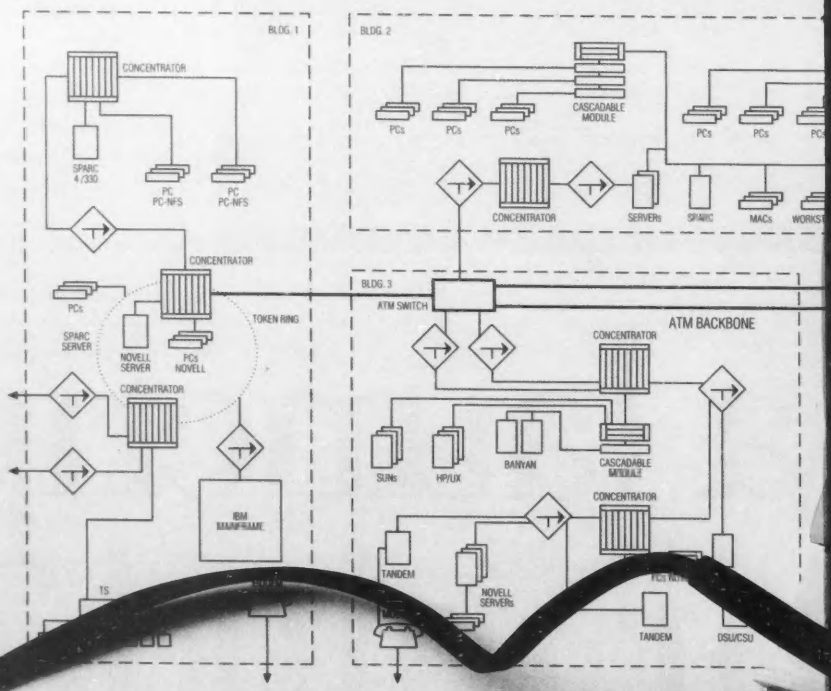

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Electronic data interchange

Sterling Software, Inc. has introduced the Sterling Commerce Connection, an electronic commerce product.

The product offers integrated access to a variety of data networking services such as electronic data interchange (EDI) transactions, file transfer, electronic-mail messages and electronic catalogs and libraries.

Commerce Connection for the PC is desktop software that offers EDI and full E-mail and library service capabilities. The Commerce Connection E-Mail Service is an add-on module that provides interpersonal messaging services such as user-based E-mail administration, access to other public E-mail systems and distribution list creation.

An EDI PC package of Commerce Connection costs $2,000. The E-mail service module costs $200.

▶ *Sterling Software*
4600 Lakehurst Court
Dublin, Ohio 43017
(614) 793-7000

Texas Instruments, Inc. has added Desktop EDI and Unix EDI to its line of electronic data interchange (EDI) products. The standards-based software supports the ANSI X12 standard and Un/EDIfact.

Desktop EDI and Unix EDI provide Gateway, an integrated communications manager that supplies unattended autodial capabilities and controls linkage to major communications protocols. An EDI Translator that converts data transmission formats into computer document formats and vice versa is provided, the company said.

Desktop EDI prices start at $4,000; Unix EDI prices begin at $50,000.

▶ *Texas Instruments*
6550 Chase Oaks Blvd.
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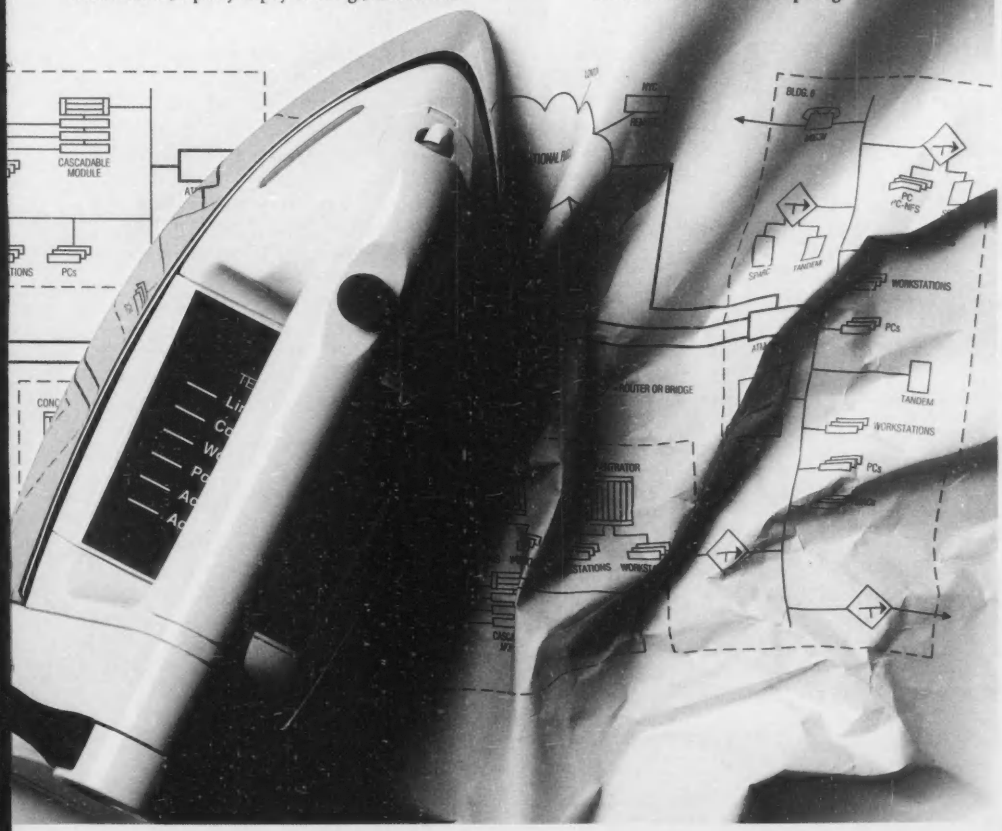

Fax

Incotel, Inc. has introduced an IMX-entry-level fax and messaging system.

The IMX-Elf consists of hardware and software that integrates advanced fax and messaging capabilities throughout an organization. It is compatible with Group 3 fax machines. Users receive an assigned identification code and password and an assigned mailbox to receive faxes.

Other features include automatic retry and alternate routing and the ability to specify document delivery time.

A complete turnkey system costs $75,000.

▶ *Incotel*
5 Penn Plaza
New York, N.Y. 10001
(212) 594-8340

Micro-to-host

Digital Communications Associates, Inc. (DCA) has announced Version 2.1.2 of the Irma Workstation for Windows, PC-to-mainframe software.

This version includes client support for the Systems Network Architecture local-area network gateway from Eicon Technology Corp. and DCA's Select Communications Server.

According to the company, it also enables PCs to access gateways such as Novell, Inc.'s NetWare for SAA and DCA's IrmaLAN/EP.

Any Transmission Control Protocol/Internet Protocol stack that conforms to Microsoft Corp.'s Winsock application programming interface can be supported, the company said.

Prices range from $495 to $19,495.

▶ *Digital Communications Associates*
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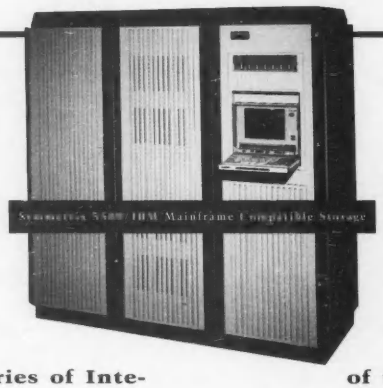
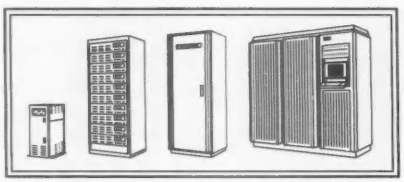
While other mainframe disk companies have been slow to deliver high data availability, the new Symmetrix 5500 ICDA™ from EMC now brings the unbeatable combination of superior performance and tenance features, a full mirroring option and the ability to repair or upgrade the system with no loss of uptime, the Symmetrix 5500 offers the highest level of data availability you can find in the

Never before has a disk storage system this fast been so available.



continuous operation to high-end mainframe computing. What's more, EMC is shipping this product today.

The Symmetrix 5500 is the latest evolution of the high performance Symmetrix Series of Integrated Cached Disk Arrays (ICDA™), and was designed for IBM and compatible mainframe sites that need continuous operation – 24 hours a day, seven days a week. With redundant hardware components, proactive maintenance features, a full mirroring option and the ability to repair or upgrade the system with no loss of uptime, the Symmetrix 5500 offers the highest level of data availability you can find in the market today.



The Symmetrix 5500 is part of an entire line of disk storage systems based on EMC's Integrated Cached Disk Arrays (ICDA™).

And, the Symmetrix 5500 incorporates the high performance, small footprint and low cost of ownership that has become the hallmark of the Symmetrix Series. Over 1,000 Symmetrix installations worldwide are proof of the widespread acceptance of Symmetrix ICDA™ technology.

To inquire about Symmetrix 5500 availability, please call 1-800-424-EMC2, extension LM64C.

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Mainframe operating systems

Will VM 2.1 draw users?

By Johanna Ambrosio
WHITE PLAINS, N.Y.

IBM hopes the newest release of its VM operating system, Release 2.1, announced earlier this month, will entice even more customers to convert to its Extended Storage Architecture (ESA).

Thus far, only about 30% of the VM customer base has moved to ESA, even though VM/ESA has been available since March 1991, according to Charles Lickel, VM product manager at IBM's programming laboratory in Endicott, N.Y. Before that, there were three VM versions on the market.

If the new release of VM/ESA does not persuade customers, the fact that IBM will stop providing service on some of the older VM versions in December may push them to make the move. The other older VM versions go out of service in June 1994. "By the end of 1993, we expect 50% of the customer base to be on ESA," Lickel said.

One user that will update VM this year is Kelly, Douglas & Co., a $3 billion food wholesaler in Vancouver, British Columbia. The major driving factor, said Doug Hirschfeld, information systems vice president, is the move into client/server applications where the mainframe will function as a server and OS/2 workstations as the clients.

"Doing program-to-program communications with VM in its older forms is very complex," Hirschfeld said. "And the older VM versions will no longer be supported, anyway."

Although Kelly Douglas will move from VM/XA 2.1 to a more current version of the operating system, one thing the company will keep is its tried-and-true Professional Office System (Profs)/VM application.

"IBM moved everyone to OfficeVision/VM, but that has a maintenance fee, where Profs didn't," Hirschfeld explained. "So I've kept Profs, and it runs just fine under VM/ESA."

Like many other users, Hirschfeld runs VM with another IBM operating system, VSE. Lickel said about 30% of MVS customers also run VM, and about half of VSE customers run VM.

"VM plays in two areas: as a 'Hypervisor,' where you can test a new release of MVS or VSE and put it through its paces, and as an interactive operating system for applications and development," Lickel said. In addition to office applications, other popular VM uses include technical design, decision support and technical computing.

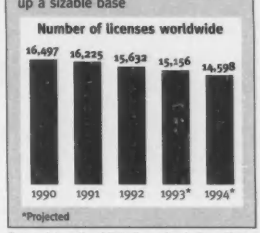
Since making the move to IBM's Client/Server unit in November 1992, the Endicott laboratory has also begun working directly with customers. About two dozen engagements have been completed so far, said laboratory director Leslie Wilkes, which include helping users convert to newer versions of VM and doing client/server projects. About half the laboratory's 900 programmers work on VM; the other half work on client/server products.

Despite the business, which Wilkes characterized as "very healthy," there is an early-retirement program under way at the Endicott laboratory that should be completed by July. Wilkes said she is not sure how many programmers will retire.

Still, VM is a $5 billion business annually when hardware and software are added up, according to Gartner Group, Inc. analyst William Malik. "Other operating systems may be more exciting because they're newer, but that's like saying my heart is boring because it keeps beating," Malik said.

Diminishing base

Although the number of VM licenses are on the decline, they still make up a sizable base



Source: International Data Corp., Framingham, Mass.

Virtual extensions

VM Release 2.1 sports an easier install program, which speeds implementation of the operating system, according to Charles Lickel, VM product manager at IBM. Other features include the following:

▶ Support for "virtual" disks, allowing users to store data in short-term memory. The exact amount that can be stored depends on the amount of memory the customer's machine has, Lickel said.

▶ Enhancements to Shared File System and multitasking and support for a new release of VSAM.

▶ Support for the new Model 9 disk drives that another IBM unit, Adstar, announced last week, plus other new Adstar products.

▶ Future releases of VM that will be introduced in nine-month cycles, Lickel said, vs. the year or longer waits to which customers have been accustomed.

▶ The ability of VM to run on the new generation of parallel-processing mainframes that IBM is now developing, although Lickel would not commit to a ship date.

▶ Standards within VM, including Posix and the Open Software Foundation's Distributed Computing Environment.

—Johanna Ambrosio

Utility moves ahead with $10M redesign

By Rosemary Cafasso
SAN FRANCISCO

In 1992, the information systems group at Pacific Gas Transmission (PGT), a subsidiary of Pacific Gas & Electric Co., decided to cast aside its traditional IBM Application System/400 host-based operation.

Not that the AS/400 itself was going away. It was just that the system would no longer be the focus of the IS group's mission.

"The management view is that technology could and should provide flexibility for new organizational structures and project teams, as opposed to [providing] a militaristic, hierarchical structure," said Larry Levitt, manager of computer services.

PGT, which provides natural gas to customers in California and the Pacific Northwest, is now in the early stages of a multiyear, $10 million reengineering plan that will provide a long list of new functions — such as easier data access and workgroup technology — and shed the centralized computing function.

Phase one is under way now and includes linking 15 departmental local-area networks — a mix of Novell, Inc. and Banyan Systems, Inc. equipment. PGT is working with systems integrator International Micronet Systems to create one enterprisewide network that ties together the isolated LANs.

"This is the roadway system," Levitt said. "You have to have this in place first. The goal is every PC on every LAN will be connected together."

Scheduled for completion at the end of the year, phase one is expected to cost about $3 million.

Phase two, which began just a few months ago, will introduce new software tools, most of which will revolve around a new data architecture that Levitt's team established late last year. Levitt estimated its cost at about $5 million.

Previously, all corporate data lived in the AS/400's database, which users typically accessed from their PCs via terminal emulation software packages.

To improve that approach, Levitt's group set up a three-layer data architecture. The bottom layer is the corporate AS/400 data, or information from what are now called legacy systems. A middle layer will be based on a Sybase, Inc. relational database management system, which PGT selected at the beginning of the year. It will include copies of the legacy data in a more user-readable format that

$10M redesign, *page 57*

ON SITE

Pacific Gas Transmission
San Francisco

Goal: To move away from a centralized computing structure and provide users with easier access to information.

Implementation: A several-year, three-phase, $10 million project that links LANs and opens the host database to users.

NCR tools foster less complex business revamp

By Thomas Hoffman

NCR Corp. recently unveiled workflow process management software that analysts said is well-suited to meet customers' interdepartmental workgroup needs.

ProcessIt is a group of software modules compatible with Microsoft Corp.'s Windows and built to allow end users to design, monitor and re-engineer their business processes throughout their enterprises.

ProcessIt was designed to allow users to alter their business processes without making any changes to the application and vice versa, according to Daniel L. Beatty, assistant vice president of coordination technologies at NCR.

He said the work-flow package is targeted at high-volume, transaction-intensive industries, such as banking and insurance, to help streamline mortgage and claims processing.

NCR's timing could not be better, analysts said, because competitive visual work-flow offerings

NCR tools, *page 57*

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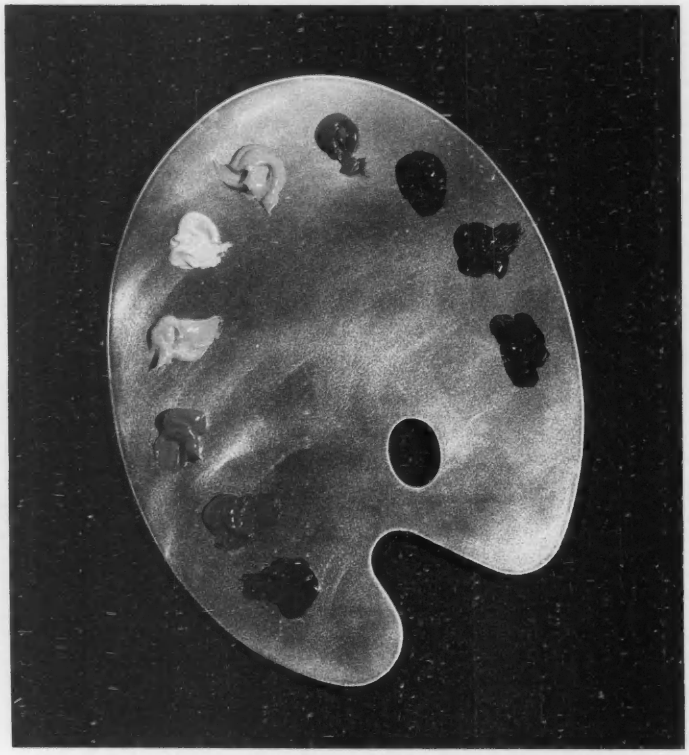

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$10M redesign

CONTINUED FROM PAGE 55

users can access directly. The third layer is the user layer, made up of local data stored on PCs.

The pivotal piece of the new architecture is the Sybase DBMS, which PGT is running on a Compaq Computer Corp. SystemPro server. It will eventually replace the legacy database.

In the meantime, it will serve as the "user view" to corporate data that previously was difficult to get to. New applications will be built to work with the Sybase DBMS as well, including an executive information system.

Currently, the team is reviewing software from Pilot Software, Inc. and Comshare, Inc. and said it expects to make a decision in the next three to six months.

In addition, Levitt has selected Powersoft Corp.'s PowerBuilder to design new applications. While other tools were reviewed, PowerBuilder "gave the best overall application development environment and relatively robust access to the SQL DBMS," Levitt said.

At the same time, the team brought in Lotus Development Corp.'s Notes to assist the team orientation for which the company is striving. "We are using it to support project members across multiple locations, and that's an important part of the management vision," Levitt said.

Phase three is scheduled to begin next year and will include linking PGT with customers, suppliers and partners. Levitt has no technical details for this phase yet.

NCR tools

CONTINUED FROM PAGE 55

— such as market leader FileNet Corp.'s Visual Workflow — will not begin shipping until later this year.

"This is really good that they [NCR] are coming out with this now, because they're beating everyone out," noted Mary Ann Richardson, a senior analyst at Datapro Information Services Group, a Delran, N.J., market research firm.

Analysts seemed equally impressed with ProcessIt's automated work-flow capabilities. For example, most work-flow products — such as those marketed by FileNet, ViewStar Corp. and Recognition Equipment, Inc. — require an image to be present to trigger a work-flow procedure. Not so for ProcessIt, according to Scott McCready, a principal at IDC/Avante Technology, a Framingham, Mass., research firm.

McCready said he was smitten with several features in ProcessIt, including a minute-by-minute process reporting feature that enables users to check on the status and efficiency of a particular process in their organization.

That is an essential requirement for any work-flow system, noted Krystyna Filistowicz, a director at Dataquest, Inc. in San Jose, Calif. "The important element of work flow is that it provides the potential to re-engineer processes within the organization and to examine the process to see how efficient it is," she said.

The work-flow suite was designed to run on any Windows-based PC client attached to an NCR System 3000 Unix server.

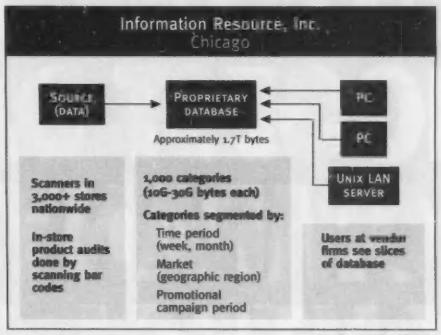
A typical 30-user configuration for ProcessIt is priced at about $1,245 per user and is available now.

Grappling with huge databases

By Jean S. Bozman

Some might call it the database that ate Chicago: Closing in on 2T bytes, it grows by 100G bytes per month.

And Information Resources, Inc.'s (IRI) proprietary database of supermarket data, fed by supermarket scanners at more than 3,000 stores, shows no signs of slowing down. The company uses the consolidated database to track 1 million products nationwide, allowing its customers, including food and soap manufacturers, to pinpoint regional buying patterns.



CW Chart: Michael Siggins

But information systems managers at IRI, as elsewhere, focus on ensuring that the database does not become unwieldy. That is why IRI's database is actually a collection of 10G- to 20G-byte "slices" that group data into hundreds of product categories.

The $276 million firm uses artificial intelligence programs to help users navigate the jumbo-size database (see chart).

IS managers at IRI and other large database sites said breaking databases into manageable pieces is a major challenge because they save reams of transactional data in a central repository for end-user query and analysis. However, they must balance the value of storing consolidated data in a huge database against the personnel and equipment associated with operating it.

Large mainframe DB2 systems, for example, use multimillion-dollar mainframes and require a staff of hundreds to maintain the system and the database.

Databases grow extra large when they are fed an increasing amount of transactional data. The largest databases are already breaking records: IRI's homegrown database is about 1.7T bytes; Nynex Corp.'s Market Intelligence Tracking and Analysis System (MITAS) is more than 400G bytes; and United Parcel Service, Inc.'s Delivery Information Automated Lookup System (Dials) is passing 1.5T bytes in size. Most databases are considered large when they become tens of gigabytes in size, users said.

Large database size complicates daily maintenance, including backups and recovery, users reported. Global reorganizations of the database are usually ruled out, as are off-line backups that would take the system down.

In many cases, database administrators prefer to add database tables rather than change the setup of existing tables. Some create database slices that can be pieced together for a single system view. Others archive aging data to keep an oversize database from outgrowing its host.

Routine tasks can go into overtime where large databases are concerned. Even backing up a 7G-byte Oracle Corp. database can take several hours, noted Michael Higgins, technical support manager at Byer California, a San Francisco women's apparel manufacturer.

Higgins said he plans to keep his Oracle 7 databases at less than 10G bytes and to run several on a cluster of Sequent Computer Systems, Inc. Unix systems using Oracle's new Parallel Server option.

To avoid management headaches, IS managers at the Seattle Municipal Courts decided to remove aging data from an 8G-byte Informix Software, Inc. database running on a Sequent computer. Starting this spring, aging data will be purged on a monthly basis. That will preserve uptime for more than 200 on-line users in the court system, said Brian Backus, director of information and revenue at the municipal courts.

Does all the trouble of maintaining a jumbo database make economic sense? For some large organizations it does, said Donald DePalma, a senior analyst at Forrester Research, Inc. in Cambridge, Mass.

But many of the large databases face a brave new future, as IS managers consider whether to move them — or parts of them — to less costly Unix servers or parallel processors.

"It depends how large the database actually is and if it exceeds the storage and administrative capabilities of an open system," DePalma said. Sites that can justify the high expense "know when they're making money, and the marketing organizations that need this data tend to be profitable." Over time, Unix servers will be viewed as suitable alternatives to mainframes for large mission-critical databases, DePalma said.

Meanwhile, users said the consolidation of many months of data provides a rich information base on which companies may forecast their future business and product plans.

Nynex's 3-year-old MITAS DB2 database is viewed as a central information warehouse for the telephone firm's customers. Managers developing new products and services can simulate a test market by querying use patterns in the 400+G-byte customer database.

To support MITAS, IS managers must decide how best to maintain, update and organize it. "The issues are what information do we want, how long should we hold it, and what should we index?" said John Tedesco, director of marketing IS at Nynex. The firm boosts DB2 performance by adding indexes that complement DB2's query optimizer, he said.

Partitioning is another way DB2 administrators make large databases easier to manage. UPS' Dials database is partitioned into 13 monthly segments to track 12 million packages each day, said Ilse Lefas, data resource manager at UPS information services in Mahwah, N.J. It is also divided into 2G-byte datasets, a physical limit for DB2.

"If you visualize a Rubik's cube," Lefas said, "you can visualize that we have a dimension of time, a dimension of geographic location and a dimension of data types."

Running a very large database usually entails great expense and high overhead, users agreed. But some, such as IRI, said they feel the benefits are well worth the trouble.

"It's like buying the best manufacturing tools for our business," said Ned Heinbach, president of IRI's Data Systems Division. "We are optimizing the database structure, in multiple dimensions, to fit our unique kinds of data. The efficiency more than covers the cost."

Jumbo tips

IS managers said the following techniques aid in managing a very large database:

- Avoid global reorganizations of the database.
- Partition an IBM DB2 database into smaller pieces.
- Increase the use of multistreamed on-line backups to tape.
- Archive aging data to slow growth of the database.
- Extract database subsets for daily queries by end users. — *Jean S. Bozman*

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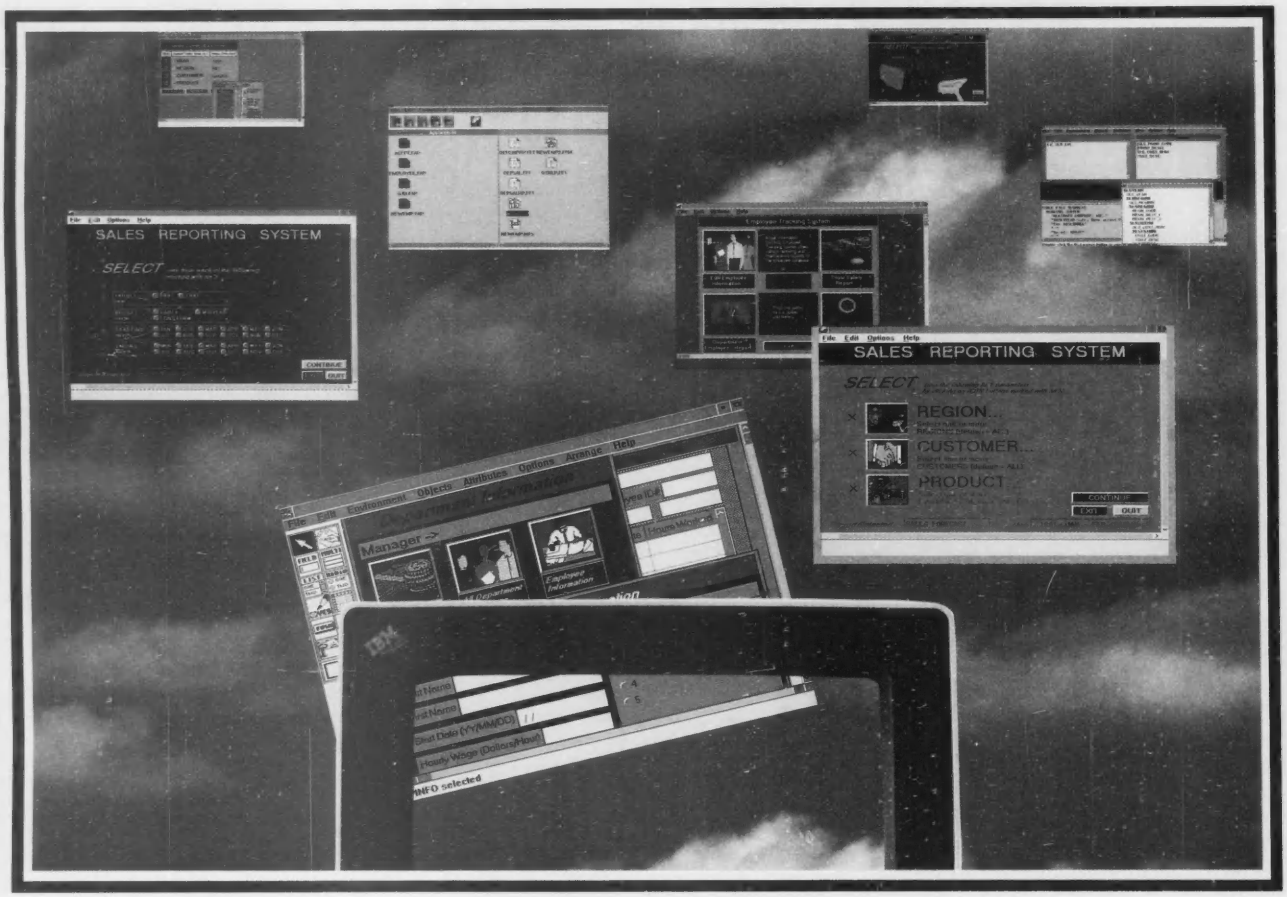

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Novell nourishes NetWare app development support

By Michele Dostert
PROVO, UTAH

Novell, Inc. is moving to beef up application development support for its NetWare local-area network operating system, hoping to prevent Microsoft Corp.'s Windows NT and IBM's OS/2 from making inroads into its more than 60% market share of LANs.

Novell succeeded in the file-and-print LAN market largely because it supported all popular desktop operating environments, such as DOS, Windows, OS/2, Unix and Apple Computer, Inc.'s Macintosh. "We believe that your computing environment should be modular; choose the best desktop for your needs, then choose the best network operating system," said John Edwards, vice president of Novell's Desktop Products Division.

However, this modular approach can be a hindrance in the customized client/server application market because developers must write to at least two environments: the NetWare Server application programming interfaces (API) for the server side, plus the desktop APIs for each supported client type.

In contrast, developers writing for Microsoft's NT Advanced Server LAN operating system or IBM's OS/2-based LAN Server need only write to one set of APIs for both client and server.

"Both Microsoft and IBM are attacking Novell from the application server side, hoping to first insinuate OS/2 and NT application servers into existing NetWare LANs and then gradually drive out the NetWare," said Craig Burton, president of The Burton Group, a network research firm in Salt Lake City.

Novell's first weapon in the fight for the hearts and minds of application developers is UnixWare, its SVR4-based Unix/NetWare integration product. Developers can, with little modification, port their Unix applications to the UnixWare server, from whence they can be accessed by both Unix and NetWare clients without modification.

"We're very interested in UnixWare, both as a development platform and for access to all those Unix applications," said Victor Pigoga, a project leader at Blue Cross/Blue Shield of Rhode Island in Providence.

Novell has also beefed up NetWare support for object-oriented application development. A January agreement with HyperDesk Corp. in Westboro, Mass., will let Novell bundle HyperDesk's Distributed Object Management System (HD-DOMS) with NetWare. HD-DOMS will allow developers to treat NetWare system software and services as objects to be reused and will thus promote efficient modular application development, according to Edwards.

Thirdly, Novell has developed new "universal clients" for each supported desktop. These new client redirectors, which can address any version of NetWare, contain a set of Virtual Loadable Modules (VLM), which provide network services for file-and-print redirection, as well as their own APIs for NetWare-specific support. A single redirector supports both DOS and Windows, thus reducing the number of client types to write to; redirectors are also available for OS/2 and Windows NT clients.

"Application developers can save themselves a lot of work by writing once to these VLM APIs, which are the same across all clients," said Bob Young, Novell's vice president for NetWare.

Novell is also publishing, in conjunction with third-party application developers, a standard set of NetWare APIs for such bleeding-edge applications as imaging, telephony and multimedia.

Ready, aim, fire

As an application development platform, NetWare offers the following:

- UnixWare for easy access to all SVR4 Unix applications.
- New object programming tools from HyperDesk and ObjectVison.
- New NetWare APIs that give developers access to directory, security and transport services.
- Support, APIs for imaging, telephony, multimedia applications.
- New support for in-house application developers.

Exchanges partner on client/server system

By Thomas Hoffman

The Chicago Mercantile Exchange (CME) and the New York Mercantile Exchange (Nymex) have joined forces in a three-year application development effort designed to create a standardized, client/server trade clearing system for 35 common and 85 total brokerage firms.

The two futures exchanges are using Texas Instruments, Inc.'s Information Engineering Facility (IEF) computer-aided software engineering (CASE) environment to build better integrated, distributed applications to replace their respective batch trading-floor and back-office systems. The joint effort is expected to speed development and save as much as $22 million through shared project costs and resources.

CME's Don Serpico: *Chose TI because it had 'happiest users'*

But do not equate sharing resources with shared systems. CME and Nymex are planning to keep their operations independent from each other, according to Stephen C. Daffron, senior vice president of strategic planning and information services at Nymex.

However, Daffron and his CME peer did not rule out the possibility of creating redundancies between each other's trading-floor and back-office systems in the event a disaster strikes either exchange.

"The distributed technologies available today aren't ready for these types of fall-back and recovery," added Don Serpico, senior vice president of operations at CME.

CME relies on a dozen Tandem Computers, Inc. Cyclone processors, along with an IBM Enterprise System/9330 mainframe, and Serpico said he wants to ensure that a

Exchanges, *page 64*

Development tools

Cadre to support two object-oriented methodologies

By Garry Ray
PROVIDENCE, R.I.

■Cadre Technologies, Inc. last week announced a new line of development tools that support two well-known object-oriented programming methodologies.

Called ObjectTeam, the workbenches will be available this June in versions supporting either the Rumbaugh Object Modeling Technique or the Shlaer-Mellor object modeling method. Both versions will be available for Unix, VMS and Microsoft Corp. Windows 3.1 and can generate C++, Ada and SQL code, company officials said.

According to the company, ObjectTeam for Rumbaugh supports a wide number of functions called for in the Rumbaugh Object Modeling Technique.

Types of support

The tool supports object, dynamic and functional models; and object, state, data flow and event trace diagrams. It also generates code for a variety of databases including ANSI standard SQL; Oracle Corp.'s Oracle 7; and object-oriented databases such as Versant Object Technology's Versant, Object Design, Inc.'s Objectstore, Objectivity, Inc.'s Objectivity, Ontos, Inc.'s Ontos and Raima Corp.'s Raima.

Aimed at multiple programmer development efforts, ObjectTeam for Rumbaugh also supports a multiuser repository and a Basic script language for access to repository contents, according to the company.

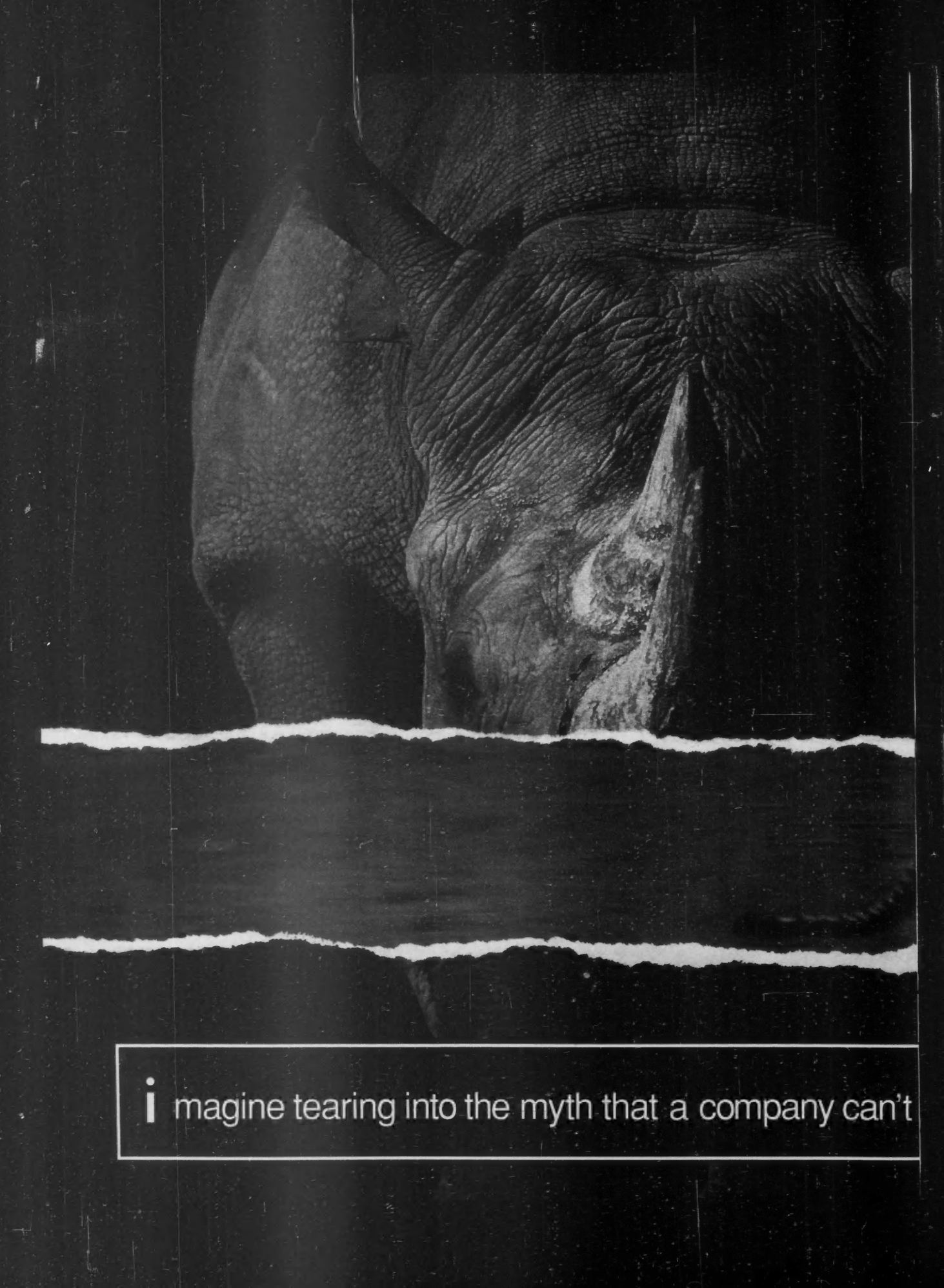
ObjectTeam for Rumbaugh "is one of the few tools to support all phases of development" using the Rumbaugh methodology, said Keith Schomburg, a senior associate programmer at IBM's Networking Systems Division in Research Triangle Park, N.C. Schomburg, who has been beta-testing the product, said: "Other tools I've tried have drawbacks or don't support all of the method."

ObjectTeam for Shlaer-Mellor is a complete implementation of the Shlaer-Mellor object-oriented design and analysis method, Cadre officials said. The workbench supports work product generation, design checking, documentation and report generation.

In addition, the tool was designed with the aid of the methodology authors.

Steve Mellor, vice president of Project Technology, Inc. in Berkeley, Calif., and co-developer of the methodology, said, "We reviewed [Cadre's] specifications for correctness against our method." Mellor, who acted as a consultant on the ObjectTeam design, added that the workbench is "possibly the most complete implementation compared with others" that are now available.

ObjectTeam for Rumbaugh and ObjectTeam for Shlaer-Mellor, with pricing beginning at $3,995 and $10,000, respectively, is slated to ship in June, company officials said.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Exchanges

CONTINUED FROM PAGE 61

switch to client/server computing has no effect on its fault tolerance.

In the early stages of the distributed development effort, Serpico said, CME will keep its Tandems as the first checkpoint for any transactions being routed, while the IBM mainframe will be used to transfer information for back-end processing. He said the mainframes may eventually be phased out for cost savings if CME can develop a fail-safe client/server environment.

Nymex, which also operates under a Tandem environment, wants to ensure the same security. "We'll be keeping our settlement and clearing systems on Tandem until we're comfortable with moving to the distributed architecture," Daffron said.

CME and Nymex have both tapped Deloitte & Touche to consult on the joint effort. The exchanges are committing a combined $22 million to the joint software development phase. Serpico said it would have cost the exchanges twice as much to develop the software independently. He said the exchanges have begun working with TI's IEF Release 5.1 to develop the distributed applications.

Tale of two exchanges

New York Mercantile Exchange
Computing platform: Tandem's fault-tolerant Cyclones.
Number of Tandem trading-floor terminals: 400.
Commitment to joint application development project: $7 million.

Chicago Mercantile Exchange
Computing platform: Tandem's fault-tolerant Cyclones and IBM's ES/9330 mainframe.
Number of Tandem trading-floor terminals: 300.
Commitment to joint application development project: $15 million.

IEF Release 5.2, which analysts said is geared toward developing graphical user interface-based client/server applications, is currently in beta testing and is expected to roll out by year's end, when CME and Nymex plan to switch over.

Serpico said the two exchanges chose TI over other CASE vendors, including KnowledgeWare, Inc., because "it had the biggest client base and the happiest users."

Serpico said the existing batch trade management system is ill-suited to support real-time trade matches. CME is working on a joint effort with the Chicago Board of Trade to automate that system. Under that four-year project, the two organizations have been testing handheld computers for their brokers and clerks to conduct audits [CW, Feb. 10, 1992].

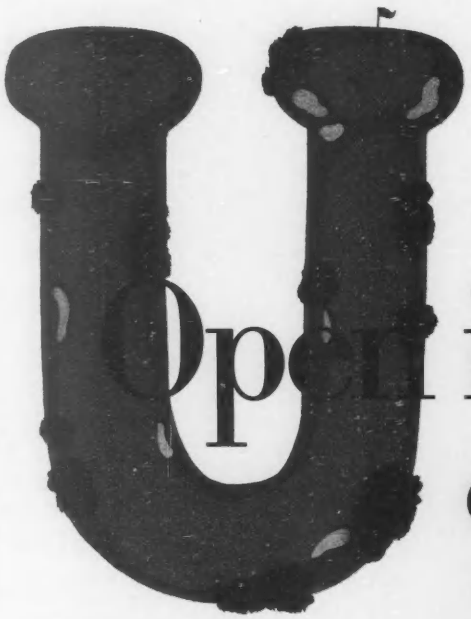
Currently, trade discrepancies among member firms often take four hours or more to settle under the batch environment. With a client/server configuration, Serpico said, he hopes to complete those transactions within seconds.

But the joint application development efforts go well beyond trade clearing, Daffron said. Unlike rival exchanges in London, most U.S. exchanges have not yet integrated their own back-office systems. It is more costly and less efficient for member firms such as Merrill Lynch & Co. to trade on an American exchange, Daffron said. "By integrating our back-office systems, we can help our clearing members to reduce their costs," Daffron said. He said Nymex has not yet determined the cost savings that would be passed on to member firms.

The distributed architecture is expected to trigger other cost savings. By moving the bulk of its core applications off its mainframes, CME expects to reduce considerably its $2 million annual hardware and software maintenance fees. CME's annual information systems budget is $20 million.

Daffron said both exchanges are evaluating Unix platforms from IBM and Hewlett-Packard Co., along with Digital Equipment Corp.'s Alpha AXP environment running under VMS. Nymex expects to choose a platform by year's end. Future Nymex applications for the platform will include trade settlements, trade captures and risk management.

Once the architecture is in place, Daffron said, Nymex plans to roll out a new application every six months.



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Programming aids

Blue Sky sharpens Windows tools

By Melinda-Carol Ballou
ATLANTA

Blue Sky Software Corp. last week announced a new version of its WindowsMaker Professional C/C++ code generator that includes a what-you-see-is-what-you-get (WYSIWYG) prototyper and tool bar support.

The company also previewed Visual SQL, a tool said to let developers incorporate database access into their applications as they build them.

The latest WindowsMaker Professional product — Version 5.0 — lets users choose the compiler they want without locking them into a specific compiler, company officials said. Compilers supported include Microsoft Corp.'s Visual C++, C6 and C7; Borland International, Inc.'s C++; the Zortech division of Symantec Corp.'s C++ and others.

The new version of WindowsMaker will reportedly generate ANSI C, Microsoft Foundation Classes or Object Windows Library code and let users set attributes and properties for control of both windows and dialog boxes. It also offers drag-and-drop editing and predefined application templates for faster development, the vendor said.

The tool bar support facilitates the defining of tool bars for applications, and the WYSIWYG prototyper aims to let users generate C or C++ source code directly from their prototypes. Special effects, such as three-dimensional buttons and patterns, are also available with Version 5.0.

Visual SQL lets users visually map data from the target databases into the application screens using a mouse. While designing data-entry screens with a screen painter, developers can reportedly add database actions directly behind buttons and other controls by pointing and clicking.

Visual SQL saves time by generating C code for the application design, which will then make direct calls to both the Windows and database application programming interfaces, the company said.

The product also offers a development-hastening Preview Mode to let developers test-run the application without first having to go through the traditional compile-and-link cycle.

Visual SQL will generate source code for access to Oracle Corp.'s Oracle, Microsoft Corp.'s SQL Server, Commandel Industries, Inc.'s Integra SQL, Borland's dBase files and all databases supporting Microsoft's Open Database Connectivity standard.

Separately, Blue Sky announced a new version of RoboHelp, the company's Windows Help authoring tool. RoboHelp 2.0 offers the ability to use a single text source for both Help and documentation. Also, a graphical debugger and intelligent agent guide developers to the location of a potential error before compiling the code, the vendor said.

Users can visually add context-sensitive Help by placing the included Help button in the application's dialog box and then clicking on the button to link in the associated Help topic. The new version also supports the Windows 3.1 Help Engine.

WindowsMaker 5.0 and RoboHelp 2.0 are scheduled to ship during the second quarter for $1,096 and $495, respectively. Visual SQL is slated to ship during the third quarter and will cost $4,900.

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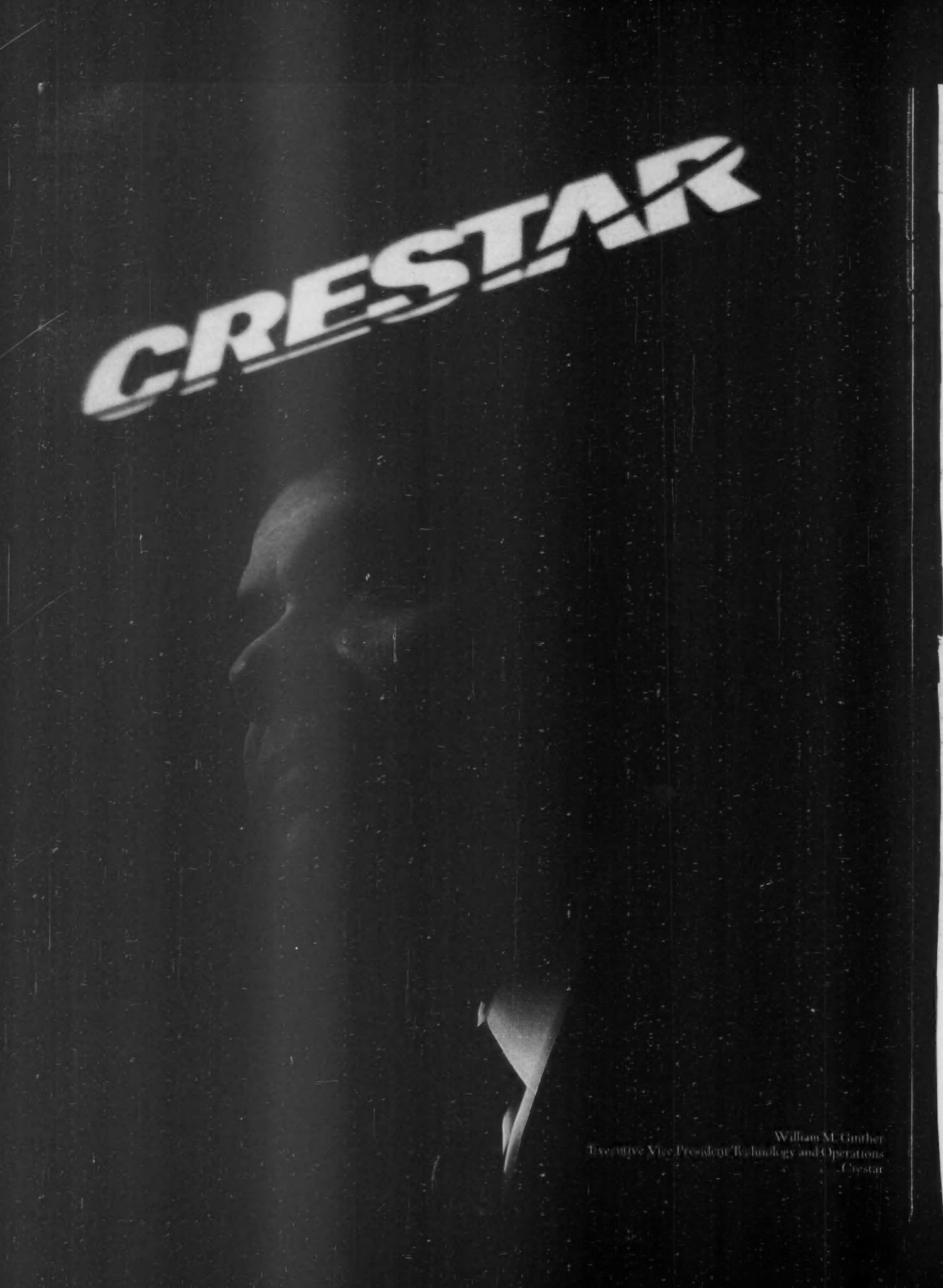

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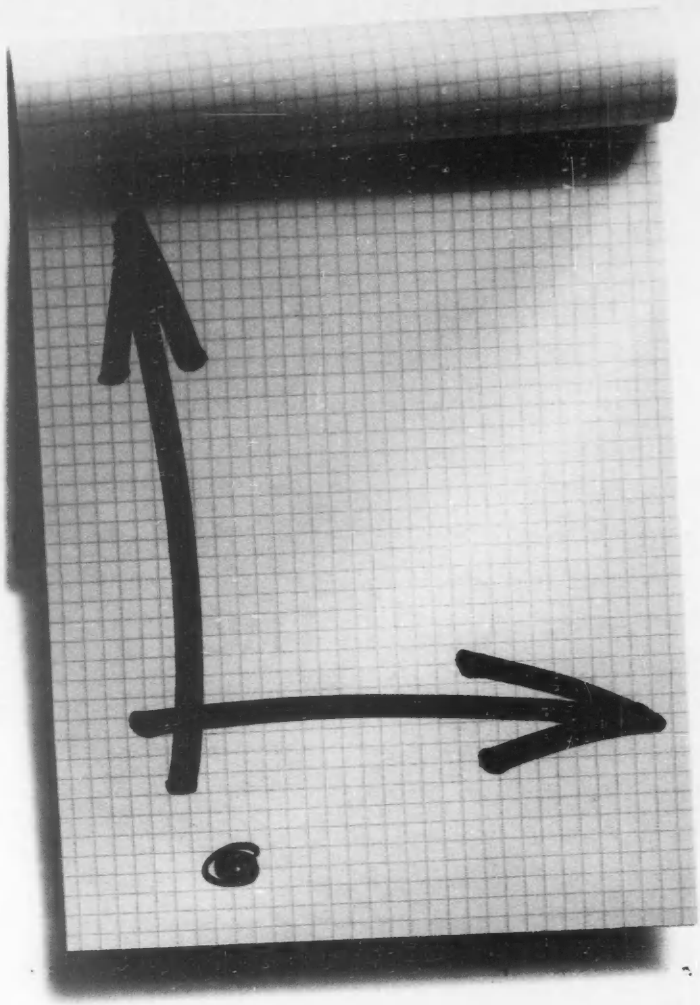

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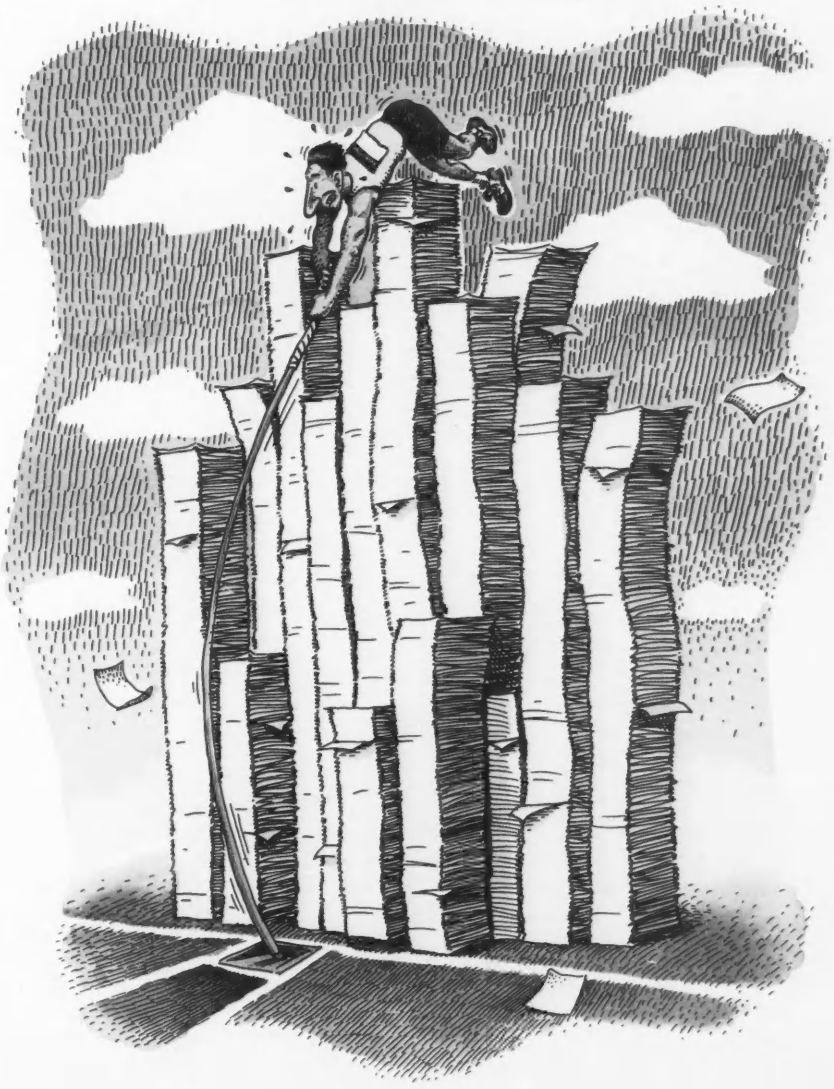

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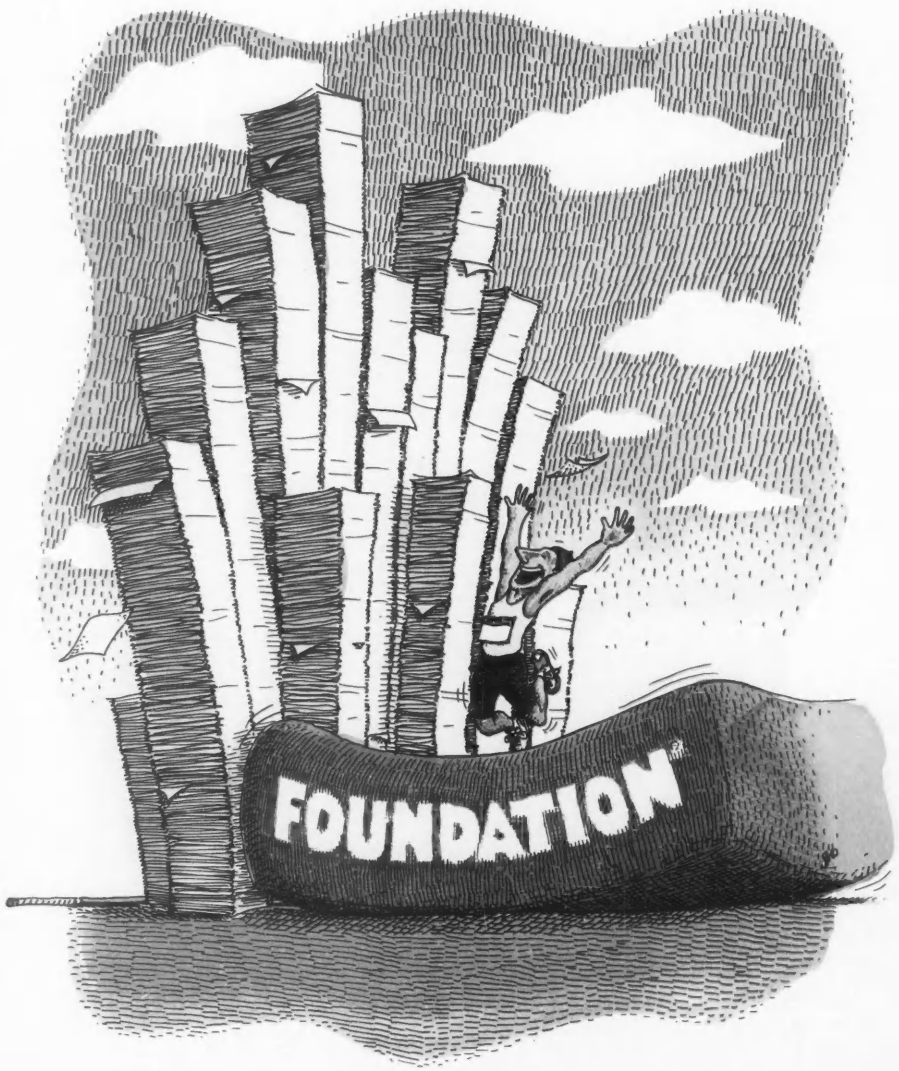

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A bridge too late?

After more than a decade of acrimony, PC managers are allying more and more with mainstream IS. Just how this odd couple will tame an "out of control" PC universe worth billions remains to be seen.

by joseph maglitta & carol hildebrand

Pacific Telecom's Roland Michaud: *'The politics can be constant'*

They are the Jerry Rubins of computing — rebels turned status quo. And according to some, none too soon.

A decade after the first PCs began appearing on corporate desks in significant numbers, sweeping technological changes are transforming a diverse array of microcomputer managers into a wider ranging, more mainstream force.

"The traditional war between IS and PCs was over a long time ago," says Priscilla Tate, executive director of the 2,000-member national Microcomputer Managers Association (MMA). The New York-based group, the world's largest organization for PC professionals, recently celebrated its 10th anniversary.

In many organizations today, PC managers are increasingly becoming allies with traditional information systems groups in hopes of taming the costly, often chaotic explosion of end-user and workgroup computing that PC managers helped create in the early 1980s.

The stakes are huge: Companies worldwide spent nearly $30 billion on PC hardware alone in 1992, according to International Data Corp., a Framingham, Mass., market research firm. The figure is predicted to modestly increase this year.

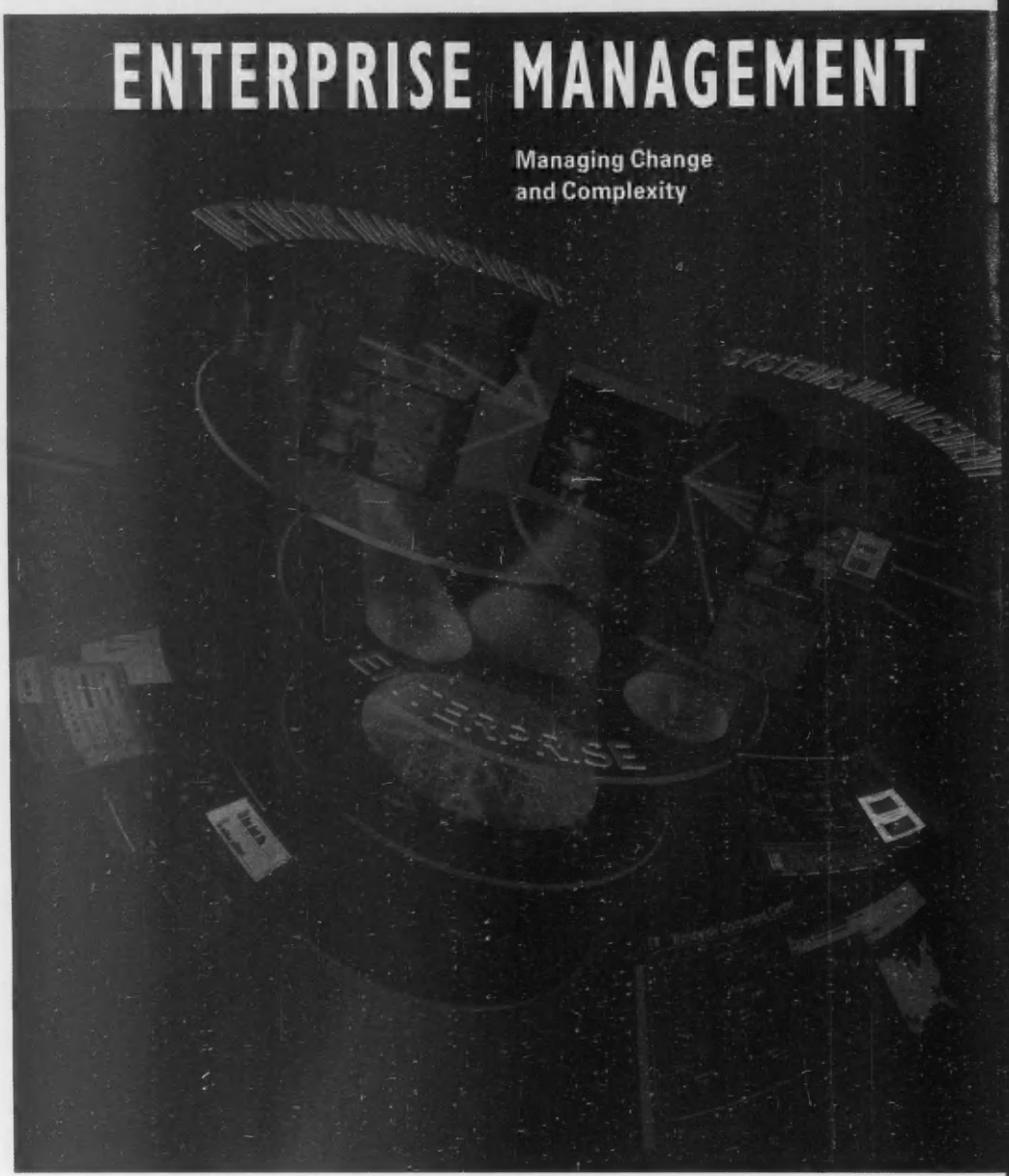
Observers say the rapid spread of newer technologies, especially local-area networks, groupware, notebook computers and client/server computing, is stretching microcomputer managers into areas once considered solely the province of IS.

"Things have changed dramatically," notes

A bridge too late?, *page 72*

ENTERPRISE MANAGEMENT

Managing Change and Complexity



Two opposing forces in modern business are on a collision course: the need for specialized, localized hardware and software solutions, and the need to cost-effectively unite those information resources into a manageable business asset.

As IT managers respond to this challenge, they must cope with explosive growth in the number and diversity of devices and systems. Enterprise systems are becoming profoundly more complex.

Organizations today have a mixture of older, centralized systems and new, distributed systems—a wide variety of technologies provided by an even larger number of vendors.

The challenge is managing this diverse collection of resources. The nature of the problem requires a "best-of-breed" multi-vendor solution.

That's why the leaders in information technology listed here are committed to creating and providing Enterprise Management solutions.

What Is Enterprise Management?

Enterprise management is a strategy for integrated monitoring, measurement and control of multi-vendor networks and computer systems to serve enterprise business needs. It is a technological framework into which multiple management tools, applications and displays can fit, providing end-to-end management of network elements and resources.

Enterprise management requires an organizational commitment to, and consensus on, a common open management platform and a set of open management standards for use throughout the enterprise.

The Benefits

Implementing an enterprise management strategy provides considerable benefits:

- Continuously high levels of reliable and responsive service.
- Smooth incorporation of new client-server solutions with existing mainframe approaches. Your investment in existing mission-critical applications is preserved and augmented.
- Change and increasing complexity can be accommodated more quickly, without jeopardizing system and network availability.
- Greater optimization of network and system resources ensures high quality service is maintained at the lowest possible cost.
- Automation of management processes allows systems administration and operational costs to reduce steadily as your enterprise grows.
- Network and data security is enhanced.

What You Can Do Today

To achieve the benefits of enterprise management, take these steps:

- Develop organizational consensus on a strategy and on a management platform:
  - working with your key vendors and carriers, develop a strategy for implementing this enterprise management architecture within your organization.
  - establish purchasing guidelines that all parts of your organization can follow so that their evolving information systems can fit into the enterprise management approach.
- Select a common open management platform for use across your enterprise that:
  - enables management of products and services from multiple vendors.
  - is standards-based.
  - enables integration of management tools and applications from multiple vendors.
- Review existing management tools and interfaces and prioritize upgrades that move the organization toward enterprise management in the most cost-effective and rapid manner possible.
- Favor distributed and object-oriented management solutions.
- Use management solutions that incorporate open management standards such as the Simple Network Management Protocol (SNMP), the Common Management Information Protocol (CMIP) and the OSF's Distributed Management Environment (DME).
- Automation is a key element in effective enterprise management. Move toward "self-managed" systems.
- Require the use of open management protocols in new information system purchases and deploy open management protocols in existing network elements, distributed systems and vendor-specific management systems.

Contact the leading vendors listed here. They can provide you with additional information on the enterprise management strategy that's right for your organization, and the products and services you need to implement it.

These industry leaders have come together to promote the business benefits of an Enterprise Management Strategy. They can be contacted directly or by using the reply card below.

The Partnership Legend illustrates relationships that have formed to provide these complex, multi-vendor solutions.

The Management Solutions Legend denotes some of the types of products and services each of these vendors contributes to a complete solution.

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American Power Conversion

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Data General

Providing the tools to build your enterprise management foundation. For information, call your local Data General sales office or 1-800-DATA GEN.

JL

J&L's X-Server, developed to manage and monitor ChatterBox systems in a Novell network, can be accessed from any SNMP management station. 1-818-709-1778

SNMP Research

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EcoSystems Software, Inc.

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- ❑ Scripted presentations in various formats.
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- ❑ Systems Management
- ❑ Network Management
- ❑ DME

A bridge too late?

CONTINUED FROM PAGE 69

Naomi Karten, president of Karten Associates, a Randolph, Mass., management consultancy that publishes a newsletter on end-user computing. "In some organizations, people who were the caretaker of the trivial are now in charge of some of the important things that are mission-critical."

Instead of concentrating on establishing guerilla PC beachheads for fed-up mainframe users, as in the early days, microcomputer professionals now work on client/server systems, LANs and wide-area networks and even help with the corporate data structure.

At the same time, downsizing has pushed desktop platforms and networks higher on the agenda for mainstream computing groups.

"In the past, PCs and LANs were auxiliary parts of IS," says Steven Kight, an internal consultant at Blockbuster Entertainment, Inc. in Dallas. "Now all that's changed 180 degrees."

The result is that IS and microcomputer managers, whose views of computing have traditionally differed, now find their missions, concerns and even roles converging.

Lines blur

At Blockbuster, for example, Kight and his group handle PC-specific tasks such as upgrading hardware to run Microsoft Corp.'s Windows. But they also consult on issues that five years ago would have been tackled by corporate IS.

"For instance, we recently acquired a couple of companies here in Dallas: Sound Warehouse and Music Plus," Kight says. "Now we're looking at the point-of-sale systems for these two chains, which are PC-based, and we're providing support, defining requirements and figuring out what the equipment's going to be looking at."

The expanding and blurring duties are evident in a string of new titles, including management services analyst, manager of end-user support and business consultant, among many others (see chart above).

Experience also varies widely: Some staffers are noncomputing professionals, such as engineers or accountants, pushed into the role. Others are trained computer specialists. Some are situated in business units; others report to IS.

But regardless of position, background or location on the organizational chart, microcomputer managers and traditional IS staffers are being thrust together by spotty past performance, savvier users and economic concerns.

The original PC revolution opened a Pandora's box that both revolutionized and traumatized computing and the way companies do business. Today, high use and huge spending on PCs and networks have become major concerns for many organizations.

Support record mixed

According to a recent study by consultancy Nolan, Norton & Co. in Boston, some 55% of all employees in large corporations now use personal computing technology. Some 70% of those are connected to LANs, according to the report, which was commissioned by Ford Motor Co., AT&T Bell Labs, Xerox Corp., Sprint Corp. and several other large clients.

Others have estimated that "shadow spending" on technology, especially PCs, by user departments in some cases inflates corporate technology spending by up to 50%.

"There's a significant financial investment in these assets, and they're scattered all over the enterprise," notes Mark T. Bolton, manager of information technology at Square D Co. in Knightdale, N.C.

"If I were a CFO or a CEO, I'd be asking tough questions on the size of this investment and its [return on investment]. Forward-thinking CIOs are realizing that, in fact, the total of inventory and asset needs to be managed comprehensively. To do that, you need some organization or function to make it happen," he says.

Yet at the time more efficiency is needed, the rapid spread of desktop and distributed computing is straining acquisition, support, training and planning services to the breaking point.

Information centers, established by some companies to handle end-user concerns, have had mixed success. Though some did a decent job and managed to protect vital data, many never garnered enough political muscle to succeed. A more serious problem was that many IS groups initially considered end-user support to be undefined, messy and insignificant.

"IS never called the shots in most companies," says John Halloran, managing principal at Nolan, Norton. "The power was defined by the end users."

Unfortunately, Halloran says, business units and their PC managers — many of whom were pushed into the job with little or no training — frequently did poor jobs.

This led a 1992 Nolan, Norton study, "Managing End-User Computing," to conclude: "The end-user computing situation often appears unmanaged and out of control. . . . Particularly when viewed from the traditional IS perspective, the environment appears to have taken on an undisciplined, *laissez-faire* life of its own."

Users help one another

In this environment, nontechnical users often remain frustrated; many are turning to nontechnical peers for help.

Unfortunately, according to Nolan, Norton, that has also created an invisible but huge problem. The consultancy estimates that the average large firm spends $12,000 to $16,000 in hidden PC support costs per year for each desktop, the result of workers providing technical support to co-workers.

This financial pressure comes at a time when many end users have become more sophisticated and proficient in their use of more affordable PCs and workstations.

A bridge too late?, *page 74*

what's your line?

Director/Manager of IS/MIS/DP
PC/Microcomputer Manager/Coordinator
Systems Manager/ Administrator/Analyst
Network Systems Management/ LAN Manager/Administrator
Computer/PC Specialist/Analyst
Director/Manager of Technical Support/Services/Operators
Director/Manager of Information Center/Services
Assistant VP/VP
CIO/VP of IS/MIS
Consultant
Office/Office Automation/Office Technology Manager
Group/Project Leader
President/Owner/Partner
Other Director/Manager
Other

Source: Microcomputer Managers Association, New York

MMA: Spunky midget gets big

As the political visibility of the microcomputer manager increases in large firms, so, too, the visibility rises of the organization to which many of these managers belong.

Priscilla Tate

"It started 11 years ago with five of us — a user group, a New York PC user group," says Priscilla Tate, executive director of the Microcomputer Managers Association (MMA). "We started out as hackers managing about 10 PCs apiece and soon grew to managing about 100 apiece."

Now the MMA is a national organization with more than 2,000 members and enough political power to influence vendors to do things they might rather not, she says. A recent internal survey showed that 23% of members are responsible for more than 500 workstations, and 44% are responsible for between 100 and 500 workstations.

It wasn't long before the group became famous for its white papers. The first, a 1986 paper on corporate buying concerns, resulted in software upgrades that were easier to administer and the first major site-licensing of micro software. A 1989 white paper on microcomputer standards spawned a vendor's standard for "floptical" technology that greatly influenced today's widespread use of 3-in. disks.

In 1991, MMA published a ground-breaking white paper on network software licensing that prompted the adoption of an application programming interface for metering software.

And last January, MMA published a white paper with International Data Group, the parent corporation of *Computerworld*, on the "real" cost of graphical user interfaces.

The group has three goals: to exchange information with other members, to protect itself from the "hype of vendors and get away from consultants telling us what to do" and to "promote the growth of our profession by providing professional development seminars, a job bank and a certification program."

—Robert Knight

RESOURCES

Organizations

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Microcomputer Managers Association
International organization focused on technology management issues.
(908) 585-9091

Corporate Association for Microcomputer Professionals
Users of PC software, hardware, networks
(708) 291-1360

Books and articles

"Management of the information center," *Journal of End-user Computing*, Summer 1992. Idea Group Publishing, Harrisburg, Pa.

"Information resources management for end-user computing: an exploratory study," *Journal of End-user Computing*, Summer 1992. Idea Group Publishing, Harrisburg, Pa.

"The effects of information centers on the growth of end-user computing," *Information Management*, November 1992. Auerbach Publishers, Boston.

Managing the information center resource: Success in end-user computing, Ardnouse, Donald (ed.) and Whalen, John (ed.), 1992. Loose-leaf reference guide updated regularly. Auerbach Publishers, Boston.

SYSTEMS MANAGEMENT

Meeting the new demands posed by Distributed Computing

Distributed systems demand the same level of management and availability that IS has historically provided in a mainframe environment. Yet the technical approach to distributed systems management is fundamentally different from that applied to centralized systems.

Hardware and software resources to be managed tend to be more numerous, widely-dispersed and provided by a wide variety of vendors. Put simply, old approaches to systems management cannot be incrementally extended to manage these new distributed systems. A new approach is required.

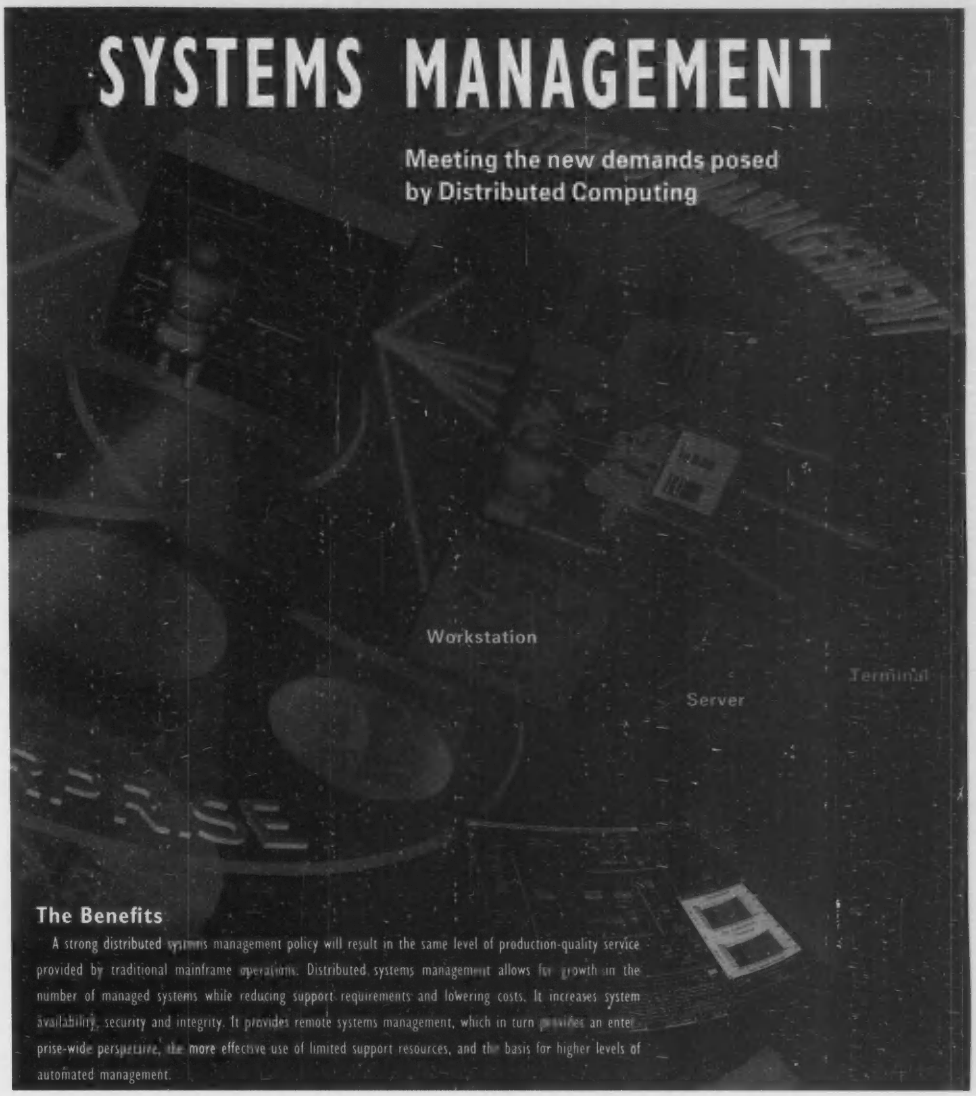
Why A New Approach Is Necessary

When compared to the centralized mainframe environment, tracking and intervention tools for distributed systems management still appear somewhat primitive - even as the number and variety of systems IS professionals must manage is increasing. At the same time, IS professionals are expected to provide backup and recovery services, fault isolation and repair capabilities, and updating procedures that provide levels of service similar to those users have come to expect from centralized systems. These demands all threaten to increase administrative and support expenses. And if these systems are poorly managed, there's a real chance such expenses may actually erase the cost reductions achieved through downsizing.

Effective distributed systems management addresses these issues. It provides the considerable business benefits of distributed computing within a context that allows for effective management of IT resources and costs.

What You Can Do Today

- Implement remote management solutions that bring the problem to the troubleshooter, not the other way around.



The Benefits

A strong distributed systems management policy will result in the same level of production-quality service provided by traditional mainframe operations. Distributed systems management allows for growth in the number of managed systems while reducing support requirements and lowering costs. It increases system availability, security and integrity. It provides remote systems management, which in turn provides an enterprise-wide perspective, the more effective use of limited support resources, and the basis for higher levels of automated management.

- Develop organizational consensus on an enterprise-wide open management platform that can interface with your legacy systems and newer distributed systems.
- Acquire management tools and applications for distributed systems that integrate with the open management platform you choose.
- Favor object-oriented management solutions.
- Place open management agents on systems, clients and servers throughout the enterprise that will communicate with your management platform.
- Take an application-oriented view towards the utilization of system resources. This allows you to target your management focus on areas likely to provide the biggest and quickest return to end users.
- Create automated responses to system problems - responses that automatically alert system managers when problems occur, or which resolve problems at the same speed they occur.
- In the switch from centralized to distributed processing, leverage the expertise, skills and methodologies of existing MIS personnel. And remember that legacy systems are likely to play a key role in mission-critical applications for many years to come.

The following companies are leaders in developing products and services that provide you with a solid foundation for effective distributed systems management. Contact them now for more information about the powerful systems management solutions they have to offer.

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Making systems perform with OMEGACENTER™ open enterprise management with OMEGAMON® analysis, OMEGAVIEW® status displays, and Automated Facilities™. 1-800-332-3235

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LANDMARK

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SYSTEMS CENTER

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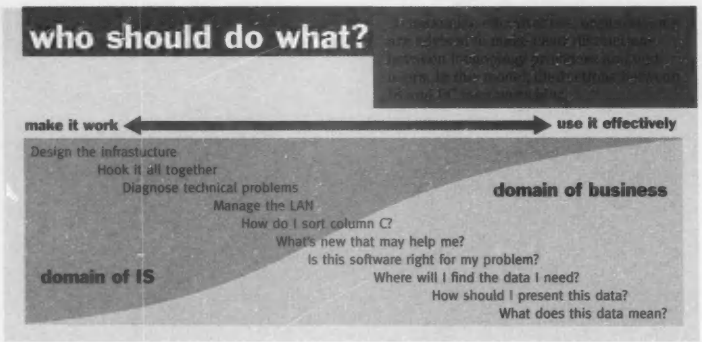
A bridge too late?

CONTINUED FROM PAGE 72

"Five years ago, [end users] were taking mainframe financial reports, inputting them to a spreadsheet program and running an analysis. All they had to learn was how to do a simple download," says Bruce Linker, assistant vice president at the Group Information Technology Division of Dean Witter Reynolds and president of the MMA. "Now people are learning to write macros in the accounting department."

Culture clashes

While cooperation between end-user computing managers and IS is improving, the fundamental pride of each profession is still evident.



Source: Nolan, Norton & Co., Boston

As a result, some worry that deep cultural differences could harm both groups and, ultimately, blunt corporate efforts to maximize PCs' use.

Roland Michaud, a supervisor of network services at Pacific Telecom, Inc. in Vancouver, Wash., says an old-fashioned "programmer mentality" that clings to old methods can put mainframers at odds with micro people.

"Programmers tend to want to hold off as long as they can. They're uncomfortable with change," Michaud says. "But the micro world changes almost daily."

It works the other way, too, Karten notes. "People who have been PC-focused may not understand the bigger IS world." As a result, Karten, author of the book *Managing Expectations: Dealing with People Who Want More, Better, Faster, Sooner, Now!*, says many microcomputer managers need to learn lessons about structure from the mainframe world.

Bolton agrees that culture clashes are "the toughest part" of bringing PC specialists, IS and end users together. "As control has shifted from an individual to a centralized focus, there's been a lot of emotional pain to let go of that control . . . and adhere to corporate standards. There have been some tremendous struggles to gain control of the assets."

Other problems loom. Because demand for PC and client/server applications is high, many end-user, IS and PC managers are inundated with demands beyond their ability to cope.

Michaud says the battle for staff and resources is an ongoing challenge. "The politics can be constant," he says. "It can be a problem . . . to stress the importance of microcomputers within the organization vs. the attention given to mainframe legacy systems."

Wayne Dunn, manager of end-user support at the Massachusetts Bay Transportation Authority in Boston, compares the plight of his peers with IBM's plight. "They had to make the shift slowly and painfully, but in the end they set themselves up pretty well with the way they've spun off their Personal Systems group and their OS/2 group. That's the way it's going to happen throughout the industry."

Optimism and infrastructure

Despite rapidly changing roles, PC managers continue to express pride and optimism in their profession and its importance to the firm.

"I'm in the right part of the business at the right time," Dunn says.

Linker agrees that downsizing has "solidified our jobs," noting "there are more PCs out there, more end users. We're not just limited anymore to teaching people to use shrink-wrapped application packages."

But exactly how firms will decide to handle PC support in the future is far from decided.

The MMA's Tate, who worked as a microcomputer manager at Manufacturers Hanover Trust Co., says the current shifts have played havoc with traditional job descriptions but will ultimately lead to new titles.

She says she believes that the typical MMA member is a good model for the future. Such professionals, Tate says, are "not just a liaison between technical and business people but a new breed of microcomputer executive in the IS department."

Regardless of who does what, many agree that among the most important near-term tasks will be to plan and create the information and networking infrastructure that will let widely scattered desktop systems share data across the organization.

Among them is Steven Gehlen, senior systems engineer at Nike, Inc. in Beaverton, Ore. The issue "isn't so much a matter of a challenge from the end-user standpoint as it is a challenge to build the infrastructure" to support the new direction, Gehlen says.

Future roles fuzzy

Exactly who will do what toward that end remains unclear.

Though no one seems sure of exact figures, there are relatively few microcomputer managers in the U.S. Too bad, because Halloran estimates that firms could save about $3,000 in annual support costs for each PC by employing a microcomputer manager.

"That means if you have 100 PCs, you're saving 3 million bucks," he says. "It's hard to show people the savings because you have to convert them to some kind of [full-time equivalent], and that's hard to do."

At the same time, the role of traditional IS in supporting end users appears to be actually diminishing, according to Nolan, Norton.

Right now, both groups tend to tackle different corners of the challenge, the consultancy says. IS is typically involved with less structured tasks such as managing performance, planning for and acquiring resources and identifying demand. In contrast, microcomputer managers tend to be concerned with operation activities such as troubleshooting, help desk calls or software and equipment installation.

Companies are experimenting with different approaches. Square D, which has about 3,000 PCs in its two divisions and corporate headquarters, is now recentralizing PC control. The manufacturer also tries to better integrate microcomputers by running a PC component through every function.

"For any project to support a business or user environment, we always have a PC group involved with it. We have integrated that function throughout," Bolton explains.

The next step, he says, is to begin central tracking of PC assets, which company officials say they hope will simplify budget planning for business units.

Although the past decade has seen many huge changes for microcomputer managers, one thing hasn't changed: the passion for PCs.

"If anyone believes for a moment that they're going to be living well in the mainframe world 10 years from now," Kight says, "they're kidding themselves."

How well former PC revolutionaries and traditional IS can get together in this new downsized world will undoubtedly make or break the futures of both groups. ■

Free-lance writer Robert Knight contributed to this article.

Don't get no respect?

Consultant Naomi Karten offers some tips on how to get more end-user respect:

Blow your own horn. "PC managers have traditionally not recognized the importance of tracking the value of what they do and keeping it in front of the eyes of the powers that be. So they are looked upon as doing busy work."

Acknowledge reality. "Talk openly with users about the demand you are experiencing instead of feeling that you have to make everybody happy all of the time. They have to understand that there are expectations on both sides."

Learn the business. "It's important to be able to understand what a day in the life of a user is like."

FirstLine blurs IS and users

There are IS departments with high-profile PC teams. Then there's Janet Wilson and FirstLine Trust. In her shop, it's hard to tell the programmers from the users.

Midway through a seven-year downsizing project, the Toronto-based mortgage bank is pursuing a strategy that blurs the traditional roles of IS and end users. The company runs on 350 networked PCs, with a Digital Equipment Corp. VAX available via gateway.

Wilson, vice president of information technology at the bank, says the more interchangeable the roles are, the faster the company can change. "You've got users in IS and IS in the user community. It's a really fuzzy line sometimes as to whether some of them are users or programmers," Wilson says.

For example, she says many IS staff members could easily be called users. "They work with the development team on functional specifications and testing," she says.

The group is organized into "pods" that include members of the business units. IS compensation is linked to how well end users receive the systems.

Wilson says teaming like this lets users work in a looser environment. "We don't need such a highly structured IS department now," she says. "We're much more fluid and able to cope in a business environment."

What makes this mix possible? She attributes it to changing skills, not new job descriptions. "We have internal IS people with business skills, and managers of user groups have an understanding of what machines can do for them."

The result? A business that can think on its feet. "I truly believe that the closer a business person can look like an IS person and vice versa, the better off you're going to be and the faster you're going to change," she says.

—*Carol Hildebrand*

NETWORK MANAGEMENT

Ensuring flexibility, consistency and reliability

Even if your network copes with your enterprise needs now, is it prepared to handle the way your organization will move and use information tomorrow? Your network will need to support applications far more complex and powerful than those you're using today. And it will need to do this flexibly and reliably, across organizational and geographic boundaries.

Without an integrated, open approach to network management, building and managing a network that will evolve successfully to meet these demands is impractical. Without effective network management, cost control is impossible.

The Benefits

Networks have become a crucial determinant of enterprise efficiency and competitiveness, which is why effective network management is now more essential than ever to the health and success of your organization.

Network availability, for example, is essential to mission-critical applications such as customer service, inventory management, EDI and product development. Network management enables consistent, reliable network service that organizations can depend on. An integrated network management approach will enable your enterprise to quickly respond to requests for new services to meet evolving business needs. This is especially crucial in a period when use of network-based applications is growing rapidly.

Integrated network management provides a foundation for higher levels of automation of administrative and operational tasks. It also improves responsiveness to user needs while substantially lowering support costs. Integrating your network management solution into a broader enterprise management strategy is far more cost-effective than investing in closed, vendor-specific solutions on an ad hoc basis. And it provides your IS department with the information necessary to track costs and optimize network resources while maintaining desired service levels.

What Is Open Network Management?

To manage today's multi-vendor networks and to be ready for tomorrow's needs, your enterprise must have an open, standards-based network management approach. Key standards are the Simple Network Management Protocol (SNMP), the Common Management Information Protocol (CMIP) and the OSF Distributed Management Environment (DME).

The platform needs to be open, multi-vendor and interoperable; and it must accommodate existing approaches and managed devices along with new devices and management tools.

Keeping all components of the network under control requires: remote monitoring and control of the various multi-vendor devices throughout the network, open management interfaces to carrier network services, and detailed instrumentation of key performance parameters in network and media elements.

What You Can Do Today

- Address network management from a strategic perspective. Ad hoc solutions and their incompatibilities will ultimately cripple your network.
- Choose an open platform for managing your enterprise network that is compatible with other enterprise management choices. Gradually, eliminate proprietary management interfaces, instead choosing new equipment based on open standards such as SNMP and CMIP.
- Place standards-based management agents on existing network devices.
- Make the use of open management protocols a requirement for new network purchases.
- Acquire management tools and applications for networks that integrate with the open management platform you choose.
- Favor object-oriented network management solutions.

Contact the leading vendors listed here for more information. They are committed to helping you implement an integrated management approach to building and managing open, interoperable, multi-vendor networks.

SOURCES OF NETWORK MANAGEMENT SOLUTIONS

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Commentary

Joanne Kelleher

The Shadow knows

If you aren't afraid of your shadow, maybe you should be.

Several information systems executives have recently described to me, in eerily similar terms, IS-like structures that seem to be lurking just outside their field of vision. They say they don't have a clear view, but they know what's out there — individuals and groups in business departments performing end-user support and business analysis functions — and they sense that these "shadow organizations" are growing rapidly.

These executives usually hasten to add that they don't have a problem with others picking up a burden that, for a variety of reasons, they haven't been able to handle. Someone has to do it, and they don't have the time or the money or even the expertise in their operations.

Top executives won't loosen the purse strings enough to cover the hiring of staff for end-user training, one IS executive explains. "They say, 'What's so difficult? Tell them to read the manual.'" And as for using existing IS staffers.... Well, truth be told, in many cases the end users already know more than they do.

It's pretty clear why business departments aren't waiting around for instructions from IS central. What isn't so clear, though, is what kind of role is going to be left for IS personnel when these shadow organizations have dug in, filled out and become more real to business departments than the folks with the official titles.

Those of you in the top echelon probably don't have much to worry about. If all the action moves out from under your existing structure, you can probably get a diplomat-type posting out in the new heartland, handling border disputes and coordinating high-level policy initiatives. The underlings may not be so lucky.

In a recent article, "The Future Role of the CIO," published in a company newsletter, CSC Index, Inc. principals Leslie Ball and Susan Falzon predicted that during the remainder of this decade, "IS people will be relied upon less, victimized in part by the very technologies they advocate." The authors go on to suggest that IS organizations will have to become flatter, more flexible and more entrepreneurial.

In some places, that scenario is already reality.

Be prepared

My best guess is that anyone who wants to stake out a secure place in the technology structure of his organization had better move quickly because the ranks of the shadow IS groups are filling rapidly. Some IS professionals may be able to slide into the remaining slots — those who are smart enough to be networking now.

It won't be easy, and it will probably mean making some detours into unfamiliar areas. It will also mean striking up conversations with strangers. And it will mean spending extra hours learning the ins and outs of PC and network operating systems and applications. Like old age, however, it is probably better than the alternative.

Stand where you are, rubbing your eyes and waiting to see if those shadows are phantoms or real, and you'll be flattened by a very real new cadre of technical experts.

How big a threat is this, really? No one knows exactly because these folks aren't on any official IS census. They don't necessarily have identifying titles, and they don't stick their heads into IS departments because they don't think those departments have anything they need.

The very idea of end users with delusions of self-sufficiency is pretty hair-raising for any career-minded IS staffer. But what's even more sobering is that these know-it-alls seem to be right. The people who've started to notice these developments haven't been alerted by screams for help but rather by the small rustlings of distant activity.

If you haven't heard those sounds yet, listen harder. That's the future taking shape out there in the shadows.

Kelleher is *Computerworld*'s features editor.

Executive Track

Patricia M. Woolsey is now **Washington Gas'** senior vice president in charge of information systems, human resources and corporate communications.

Woolsey is a 23-year veteran of the Washington, D.C.-based utility. She most recently served in the capacity of vice president and general manager of the company's Virginia division.

At **United States Trust Co.** in New York, **Philip S. Felice** has been promoted to vice president. Felice, who has been at the financial services company since 1985, is a manager in the systems development department of the Computer Services Division. He is responsible for cost-effective systems development and support.

Terrell Jones

Jeffrey Katz

Bruce Parker

Three executives helping to steer AMR Corp.'s newly minted IS subsidiary **Sabre Technology Group** have been elected vice presidents of **American Airlines**.

Wearing the new titles are **Terrell B. Jones**, president of the group's Sabre Computer Services unit; **Jeffrey G. Katz**, president of the Sabre Travel Information Network; and **Bruce D. Parker**, president of Sabre Development Services.

Carol E. Chamberlain is the new associate dean of technical services and systems development for university libraries at **Northeastern University** in Boston.

In her new post, Chamberlain, who formerly served as chief of the acquisitions department at the Pennsylvania State University Libraries, is responsible for the Northeastern library's computerized support operations, holdings and information resources and services.

In Livingston, N.J., **The CIT Group, Inc.** recently promoted **John J. Fischer** from vice president to senior vice president of systems and technology. A joint venture of The Dai-Ichi Kangyo Bank Ltd. and Chemical Banking Corp., The CIT Group is an asset-based finance company.

Intelligence Files

Password pluckers

Anyone who has ever forgotten a computer password will be happy to know that a new breed of software is being sold over the counter to bail out forgetful users and their network administrators. However, the password-cracking utilities have an obvious downside if they fall into the wrong hands.

When the author installed one "password plucker," the on-screen menu offered options such as "reveal user names and passwords" and "reveal forgotten file passwords and/or decrypt file." He selected the latter option, and the program found the password in four seconds.

Source: "Password Pluckers for Sale" by Robert Kane, *Infosecurity News*, May/June 1993.

Jargon-free reports

Chief information officers often need to write business reports to justify or promote an information technology project. When the report is going to general managers, it should focus on business issues and keep the technology-related information to a minimum.

Stamp out jargon, reduce acronyms to an absolute minimum and translate technical information into plain English.

Source: "Writing Reports That Work" by Edward Wakin, *Beyond Computing*, March/April 1993.

Client/server telephony

Most of the action in computer/telephone integration has been on mainframe computers or private-branch exchanges. But the architectural wave of the future will be client/server call processing, which will have standard interfaces to Microsoft Corp. Windows-based software and will thus put telephony applications in the hands of desktop PC users.

One of the long-term advantages of client/server call processing is the ability to share expensive resources among many users.

Source: *Sing*, April 1993.

RAM violation

Caution: Loading copyrighted software into the random-access memory of a computer is the equivalent of creating a copy of that software and thus violates federal copyright law. So ruled the Ninth U.S. Circuit Court of Appeals in *MAI Systems Corp.* v. *Peak Computer, Inc.*

Source: "Intellectual Property Update," *The National Law Journal*, May 3, 1993.

Calendar

JUNE 6-JUNE 12

Equipment Resources Planning Institute. Washington, D.C., June 7-8 — Contact: Equipment Resources Planning Institute, Santa Monica, Calif. (310) 394-2997.

JUNE 13-JUNE 19

Seventh Netron Users Conference. Toronto, June 13-16 — Contact: Leslie Connell, Netron Inc., Toronto, Canada (416) 636-8333.

Enterprise Network: Building and Managing for Change. Boulder, Colo., June 13-18 — Contact: International Communications Association, Dallas, Texas (214) 233-3889.

The Outsourcing Conference. San Francisco, June 14-15 — Contact: Digital Consulting, Inc., Andover, Mass. (508) 470-3880.

Client/Server World. Boston, June 14-16 — Contact: Digital Consulting, Inc., Andover, Mass. (508) 470-3880.

Electronic Messaging '93. Atlanta, June 14-17 — Contact: Electronic Mail Association, Arlington, Va. (703) 875-8620.

International Teleconferencing Association Conference '93. Washington, D.C., June 14-17 — Contact: International Teleconferencing Association, Washington, D.C. (202) 833-2549.

With the emergence of distributed, multi-vendor computing environments, the creation of a standards framework to facilitate their effective management became a top priority. As a result, leading vendors, working through the Open Software Foundation (OSF), have developed a set of open, vendor-neutral standards known as Distributed Management Environment (DME).

DME was conceived to get the most out of today's advanced distributed computing technologies, open standards, interoperability and object-oriented technologies. Its standardized framework represents an industry consensus on application program interfaces (APIs) and protocols for open management. DME is a 'living' standard, evolving as technologies evolve, enhancing the latest industry developments.

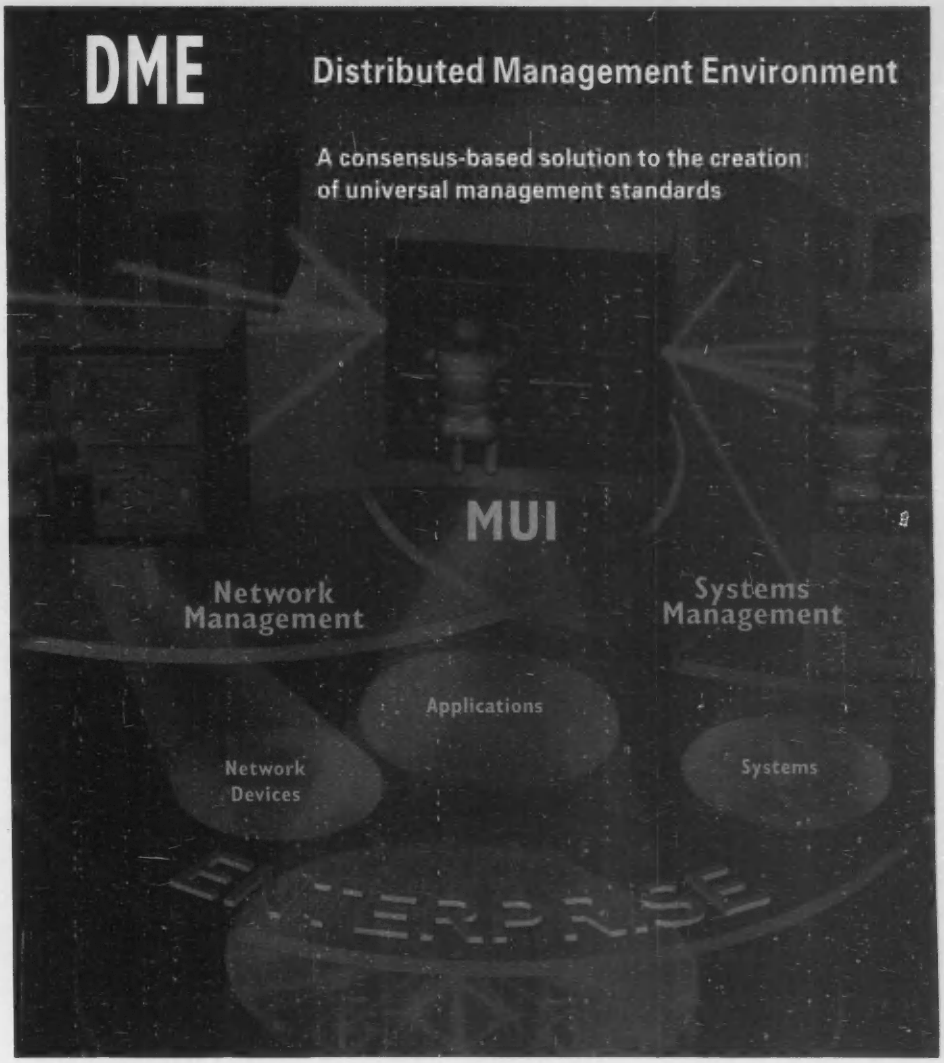
Why DME Works

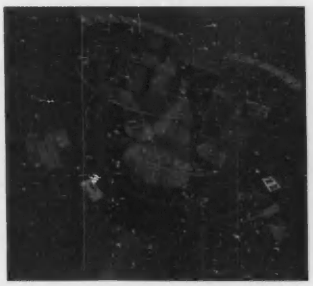
DME builds on existing standards. It is not an alternative to other standards. Rather, it represents a complementary approach that encompasses existing SNMP and CMIP standards and endorses interfaces devised by the Network Management Forum, X/Open and others.

DME is the product of a multi-vendor, consensus-based process. As a result, DME maps to your computing environment and manages growth in multi-vendor systems and networks. And because DME is the product of industry consensus, it accelerates the process of reaching consensus within your organization.

DME is based on a comprehensive set of requirements developed through an open, industry process to meet specific objectives and address real needs.

DME is vendor neutral. It enhances competition in the management market. This will result in lower costs and better solutions for users.





The Benefits

DME's wide-ranging benefits include:

- A scalable, distributed architecture that can accommodate growth in multi-vendor networks and distributed systems.
- Better management, interoperability and integration through the implementation of common management services and standardized protocol and object definitions.
- Reductions in time and costs for system administration and training.
- Tightly integrated solutions utilizing object-oriented design, for easier and more flexible integration of scalable, distributed, multi-vendor architectures.
- Greater longevity of systems resulting from standards-based, backwards compatibility.

What You Can Do Today

No matter where you are in the development of your network, we suggest evaluating DME as you build your enterprise management strategy. Portions of the DME will be available during 1993 from a number of vendors. Complete implementations of DME will begin appearing in 1994.

Contact the Open Software Foundation for more information on DME and how it can provide you with a framework for managing growth in a multi-vendor systems and networks. Or, contact these leading vendors who have committed to supporting DME.

DME SUPPORTERS

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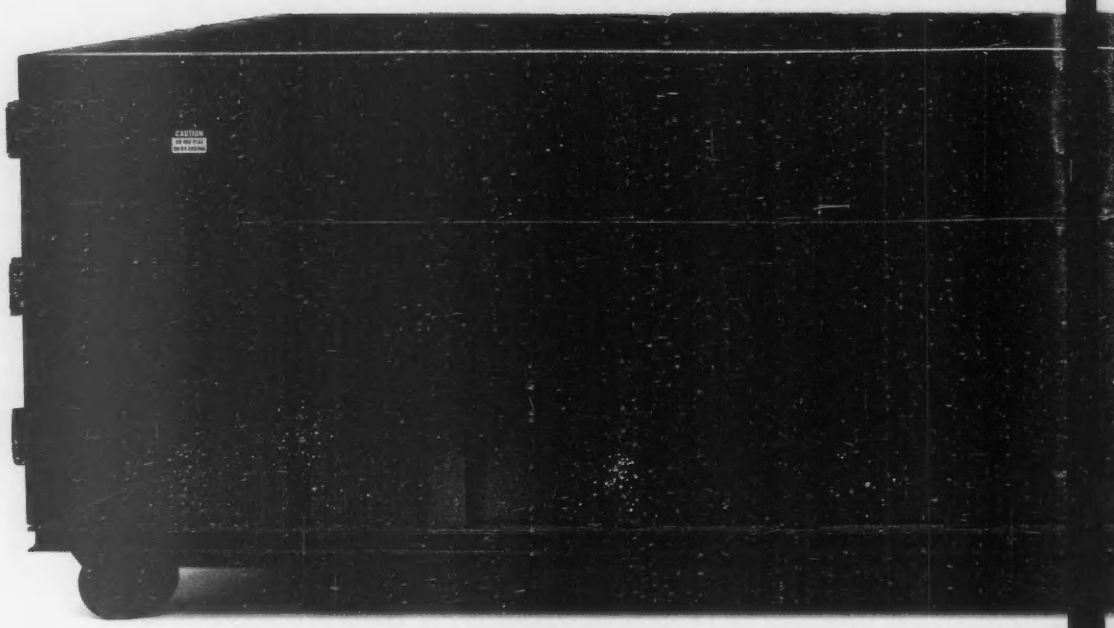

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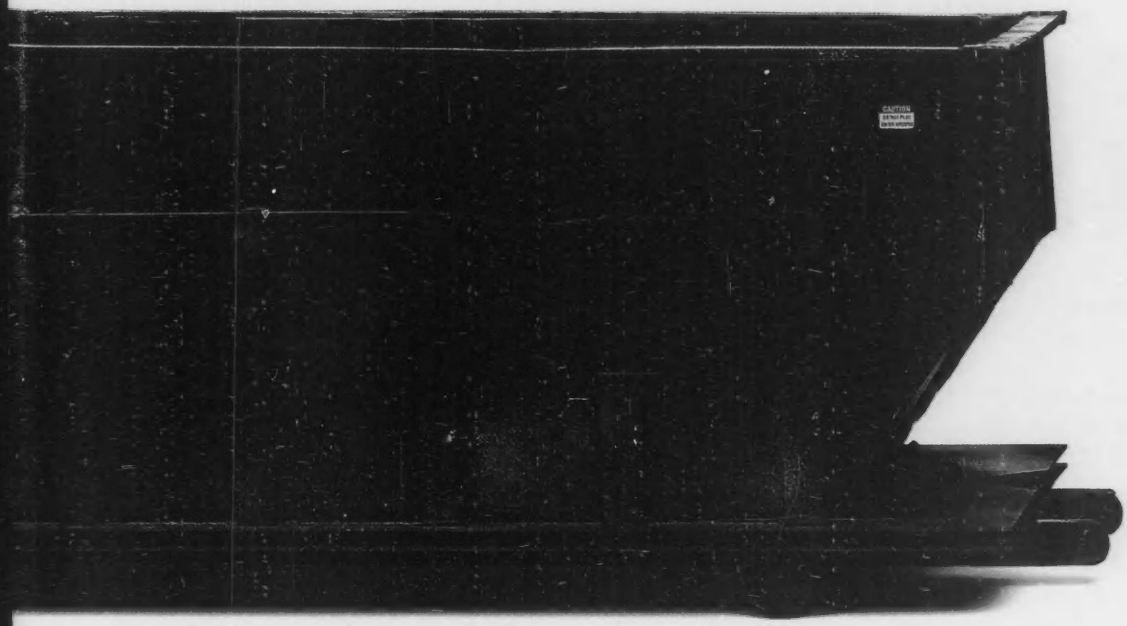

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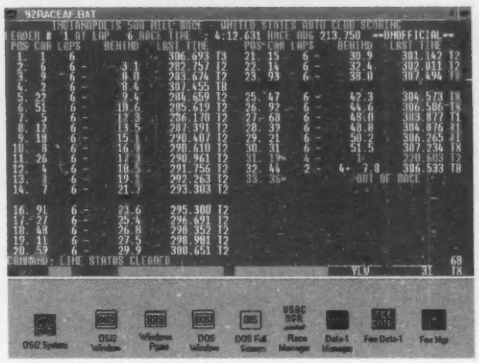

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FAST, FASTER, FASTEST DEVELOPMENT

RAPID APPLICATION DEVELOPMENT METHODS CAN SPEED SYSTEMS DELIVERY BY AS MUCH AS 1,300%. BUT MOST COMPANIES GET 0% IMPROVEMENT BECAUSE THEY TALK ABOUT CHANGING TOOLS, NOT TECHNIQUES.

By W. Burry Foss

Many information systems groups would kill to speed up application development even a little bit. After all, getting applications to users faster is less expensive and means happier customers and coders.

That's why when companies such as a Houston division of a $104 billion energy company talk about 25% increases in delivery of components for $20 million and $30 million systems, IS chiefs want to know *how*.

Rapid application development (RAD) methods, that's how.

As its name implies, RAD helps get systems out faster, through a combination of speedy design iterations, data modeling, user/developer teamwork and automated development tools. In fact, some proponents claim 25% faster delivery is on the conservative side, with 500% and 1,300% increases possible for some firms.

Unfortunately, I'm going to have to burst some bubbles here. Most companies using RAD will have little or no increase in their delivery times because they fundamentally misunderstand what RAD is about. RAD isn't about fancy automated tools but about significantly rethinking development methodologies and management techniques. The idea is to accelerate learning so developers can use new techniques for business good.

INSIDE
INTERVIEW WITH JAMES MARTIN PAGE 83

RAD's success depends on companies adopting ideas such as the following:

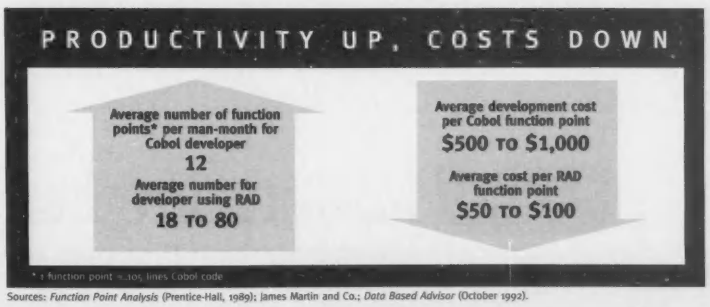
- **Incremental delivery of system components.** The system never gets delivered in its entirety. The first component comes out in three to four months and the rest at three- to six-month intervals. No delivery takes longer than six months.
- **Teamwork.** Developers work in teams, and teams work closely with business users, showing users timely iterations before finalizing the design.
- **Achievable goals.** Workers, not management, set deliverables, which are goal-driven.
- **Less waste.** With an eye toward innovation, developers work to eliminate unnecessary steps in the system development methodology. For instance, the energy company developed a template for on-line screen generation in its first delivery and reused it to replicate extra screens in later releases.

Big bang is bust

Contrary to popular belief, using whiz-bang tools in development can actually extend delivery time. That's because you just can't drop new tools into a rigorous, linear way of defining requirements, designing systems and building them and expect them to work miracles. The 1970s "big bang" approach to systems implementation, in which all functionality is delivered at one time, isn't working.

For instance, one company, which planned to deliver its real-time process control software

Development, *page 83*



Sources: *Function Point Analysis* (Prentice-Hall, 1989); James Martin and Co.; *Data Based Advisor* (October 1992).

Foss is a senior associate at the management consulting practice of International Systems Services Corp. in Stamford, Conn.

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*BYTE Magazine 3/93. **In Canada, call **1-800-GO-LOTUS**. ©1993 Lotus Development Corporation, 55 Cambridge Parkway, Cambridge, MA 02142. All rights reserved. Lotus, 1-2-3 and Freelance Graphics are registered trademarks and SmartIcons is a trademark of Lotus Development Corporation. OS/2 is a registered trademark and Workplace Shell is a trademark of International Business Machines Corporation. Windows is a trademark of Microsoft Corporation.

Development

CONTINUED FROM PAGE 81

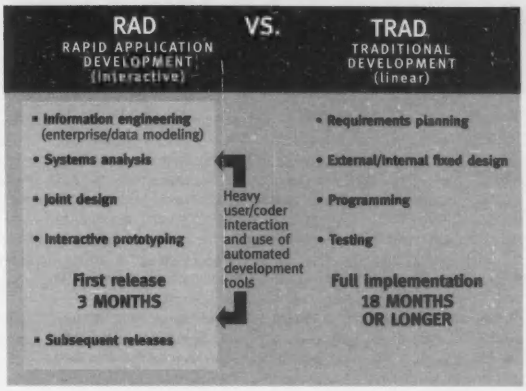
all at once, had to terminate the project after repeatedly failing to meet its delivery deadlines. At the point at which the company halted work, the system was 18 months overdue.

"Using RAD in an IS setting is a formidable challenge because our discipline expects precision, rigor and tools to be the solution," says Bob King, a RAD sponsor at The Travelers Corp. in Hartford, Conn. RAD has been in use at Travelers since 1990.

The Houston energy company, for its part, broke a pattern of changing requirements and extended delivery schedules by altering the rigid '70s ways of managing projects. It instead adopted RAD and its management technique of delivering systems incrementally, in releases.

The oil company's IS team set initial "breakthrough" goals in which developers finished core applications, such as a tax subsystem for natural gas accounting, early. The developers could then focus on creating remaining pieces of such a system more quickly — pieces that contained important functionality, such as interfaces to the general ledger and accounts payable system.

This project, which was slated to last one year from the start of construction, took seven months — four months for the first core systems with remaining pieces released three months later.



What is most striking about this case is that developers did not use cutting-edge tools. The fanciest IS got was an applications generator that made code production easier. Otherwise, developers worked with conventional technologies such as Cobol. The concentration was on understanding business requirements, applying database technology and learning how to work effectively in teams.

Developers at the Virginia Department of Taxation opted to keep things simple as well. They created the organization's massive tax accounting system — a synthesis of 1,500 programs and 40 databases — by coupling conventional third-generation language and database technology with RAD management techniques. Currently, users wait no more than a year for any new functionality.

IS personnel say the project thrived because they focused on setting aggressive but achievable goals and ensuring new functions every three to six months.

Under the gun

IS continues to be under pressure to deliver systems more quickly, and even phased waterfall proponents may turn in desperation to RAD to satisfy critical business needs. In this way, RAD has sprung up in small pockets in many organizations, even though these companies haven't openly embraced it. It is in these renegade groups that RAD gets its best public relations; if it works there, it is more likely to find a home in the organization at large.

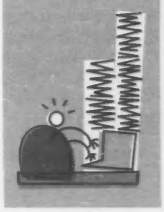
At Travelers, for example, IS in one of its insurance divisions was under extreme time pressure to deliver business applications. Because delivery took an average of 18 months using traditional development methods, the group turned to RAD hoping to capitalize on automated development tools. In the long run, the tools became incidental as the group came to rely heavily on teamwork, involved business partners and the creation of risk-taking, team-based decision-making in IS.

Today, this group is using RAD to aid in enhancing applications and is delivering pieces in three to six months. While the company is still not using such methods for its mainstream development activities, King says, RAD acceptance is growing steadily.

Face it: Old habits die hard. But RAD can help to significantly increase development productivity, as long as IS groups approach it as a new way to manage development, concentrating on teamwork and a project orientation. Otherwise, no software tool, no matter how advanced, is going to make any difference. •

Slow burn

Don't let employee burnout burn down your RAD effort. Quality specialists who look at work activity say the average professional spends 60% of his day on productive activity. With RAD, this increases to more than 80%, creating anxiety and feelings of overwork that can ultimately undermine a project. Manage to make stress reducers, like breaks, part of the plan. After all, speedy work is an accomplishment, not a punishment.



INTERVIEW

James Martin: 'You are taking a terrible risk if you don't do fast development'

James Martin, the so-called "Father of CASE," says he believes one of the biggest myths about RAD is that it can be done only with small systems. Martin, chairman of James Martin and Co. in Reston, Va., and a frequent speaker and author, says that, in fact, large systems are at risk if they don't *use RAD techniques. He recently spoke with senior editor Lory Dix about this and other RAD issues.*

Q. How can RAD be applied to large, mission-critical business applications development?

A. What you do is split the very big, complex application into small pieces, with each piece a RAD in its own right. I like to call those multi-RAD projects. Each piece would be finished in three months and be highly visible to the businesspeople. You would use GUI prototyping during the requirements planning stage. You'd do requirements tracing from the business requirements to code modules (with CASE tools to help). You'd appoint a software repository coordinator to make sure all the different pieces fit together.

I've seen it done with large systems — 2 million lines of code.

People say bringing in RAD is a risk. I'm saying the opposite — you are taking a terrible risk if you don't do fast development.

Q. Do you have any examples of what happens when you don't use RAD for large projects?

A. One bad example happened just recently at the London Stock Exchange. The exchange tried to build a system called Taurus, which would enable it to get all the share certificates into electronic image form. It was completely redesigning what goes on in the stock exchange. They were using conventional systems development methodologies, and it ended up a total catastrophe. After about five years of work, it didn't happen.

Total losses, including those to banks and brokers, were more than $1 billion.

The London Stock Exchange chairman referred to the software in this instance as an "invisible palace." How could anyone know what developers were doing when the software was invisible?

DAVID GABLE

If they had broken the project into small pieces, building each piece in three months and making it all highly visible using GUI prototyping, they might have avoided this catastrophe.

Q. Is RAD applicable in all cases?

A. The life cycle is much more applicable to business systems than engineering systems. Code generators don't work very well for scientific computing because of the heavy, complex logic requirements.

Q. What are the most common mistakes you see companies making when it comes to RAD?

A. Lack of training is a problem. You've got to understand that this is not just iterative prototyping but a life cycle that information technology people need training in.

Using poor tools is another problem, as is mismanagement. This life cycle needs to be managed professionally, like an engineering discipline.

Lastly, people won't let go of old life cycles. Everybody in the British government, for instance, wants to do the SSADM [development methodology], and that just doesn't work for fast development.

Computer Careers

Teams are ■; hierarchy is ■

Self-managed IS work teams help build the skills necessary to survive in flattened organizations

By Joe Panepinto

BUZZWORDS COME and buzzwords go, but work must still get done. At least that's the view from those on the front lines — the information systems personnel who are required to pay homage to the latest management trend and still deliver quality service to increasingly impatient end users and customers.

Lately, fashionably up-to-date IS organizations have been touting the effectiveness of self-directed work teams. These groups of IS personnel span functional and technical areas and are responsible for doing their work with little or no management supervision.

20%
OF 162 IS DEVELOPMENT DIRECTORS AT LARGE COMPANIES SURVEYED ARE IMPLEMENTING SOME FORM OF TEAM ORGANIZATION.

Source: 1992 CSC Index, Inc. Survey, Cambridge, Mass.

But working in self-directed work teams can be a mixed bag in terms of career direction, opportunity and day-to-day responsibilities. It can be jarring for the uninitiated, but for those who have already worked in teams, it's a chance to garner new skills that help in flattened organizations where fewer clearly defined career tracks exist.

"We more or less set our own work pace; we don't have to report to a manager on a regular basis, and we deal directly with our clients," says Jim Petro, knowledge-base coordinator at LTV Steel Co. in Cleveland.

Petro is a veteran member of an eight-person data administration team that has members at three LTV sites and serves the data modeling needs of more than 300 people. To Petro, while working in an IS team has meant more job satisfaction because of the autonomy it affords, it has also meant more responsibility.

Petro and each member of the team are responsible for the database modeling, design and coding for roughly 15 databases. They are also responsible for hashing out the duties of each team member at a weekly meeting run by a "manager of the week."

Panepinto is a free-lance writer based in Amherst, Mass.

Expect to broaden skills

In addition to accepting more responsibility, team members must also widen their skill set to include technological experience, communication, team-building and consensus-oriented skills. These skills enable IS members to move horizontally on different technical tracks or vertically on the few existing managerial tracks, says Nick Vitalari, a consultant at CSC Index, Inc. in Cambridge, Mass.

"We've seen a significant flattening of our organization," says Mary Sitko, quality and training manager at Dana Corp., a Toledo, Ohio-based automotive and truck component manufacturer. At Dana, there are 10 IS teams in a department of 75 employees. Sitko says her department went from having 15 supervisors five years ago to having none and from six managers to four "coaches" — manager substitutes selected randomly. Coaches are team members with special responsibilities such as having the final say in capital expenditures.

But being a coach does not present a clear step upward in terms of career path. In many firms, middle management has been largely eliminated. As a result, team membership prepares IS personnel well for flattened career paths.

Horizontal movement accepted

"In the past, the important thing was always upward mobility," Sitko says. "Now it is more acceptable to move horizontally to different technical positions. This gives you lots of breadth so you're more valuable to the company."

"Most organizations who go to teams have cross-functional teams that allow IS personnel to step out of their narrow specialties," says Madeline Weiss, president of Weiss Associates, a Bethesda, Md., management consulting firm.

Medtronic Corp., a Minneapolis maker of implantable medical devices, for example, has a 90-member IS department that is currently organized into 16 functional teams aligned with the company's six lines of business. Team members may cross over to other teams when the project load changes, says Tom Morin, vice president of IS. This builds a valuable knowledge base.

Texaco, Inc. Research and Development's 12-person computer systems and networking team adds to this knowledge base further by instituting an employee-swap program in which employees from its Beacon, N.Y., site spend five to six weeks working at its Port Arthur, Texas, site, and vice versa.

"You really need to understand what's going on with everyone's end users and customers to communicate effectively within a team," says Ralph Fleming, a team member at Texaco.

Paradise or purgatory?

In the worst case, self-directed work teams sound like some kind of subcommittee purgatory. In the best instance, they sound like a nonhierarchical paradise. In reality, they fall somewhere in between.

Positive outlook

You're developing wider skill sets in a flattened organization — the ability to come to a consensus, form teams, solve problems and adjust to new projects.

Negative outlook

You're getting new responsibilities that you never wanted — dealing with poor performance, decision-making, budgets, hiring and firing decisions, capital expenditures and training decisions.

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LAN administrators picking up new roles

Jobs in

By Alice Bredin

Most local-area network administrators agree on one thing: Their title is misleading. During the past few years, they have devoted less time to fixing LAN hardware and more time to answering users' questions, interconnecting LANs and expanding their technology base.

At a large multinational firm in New Jersey, for example, LAN administrator Keith Fletcher used to spend the majority of his time keeping the network running smoothly. Now, with less troublesome LANs, 30% of his day goes to helping users — up from 10% during the last few years.

"I always had responsibility for software support, but because people are using more packages, it's more of my job now," Fletcher says.

LAN expansion

The increase in responsibility also encompasses the task of expanding the LAN while improving system performance at the same time. LAN administrators agree that understanding the technology that helps them increase efficiency is crucial. The most important technologies include Simple Network Management Protocol, protocol analyzers and routers, bridges and gateways.

Gordon Craig, LAN/wide-area network administrator at the Texas Rehabilitation Commission in Austin, keeps up with this technology by spending 60 to 90 minutes a night reading about LANs.

One of the more difficult areas is interconnecting departmental LANs. LAN administrators say — not learning the actual technologies but finding where to acquire the skills to apply them.

"Finding someone to teach you about these technologies is tough because not too many people know them," says Rein Hofstra, LAN administrator at Blue Cross/Blue Shield of Florida in Jacksonville.

Hofstra makes up for this skill shortage by reading books and getting practical help from people in other departments who are familiar with the topic. The time frame for learning a technology, he says, is approximately one month when he has assistance vs. up to six months when the skill is self-taught.

Interplatform connections

Wayne Robertson, network administrator for corporate information systems at Saint Agnes Medical Center in Fresno, Calif., found himself in a similar situation.

Robertson is busy networking the hospital's minicomputers, but because there are so few resources for learning interplatform connection, he visits companies that have succeeded in doing the same thing. "We copy other people, do some tests and make a lot of mistakes," Robertson says.

These technologies are not difficult to learn, Robertson says, but finding the time to attend conferences is hard. "If you go to all the different conferences and seminars, you can end up being out of the office 30 days a year."

Finally, if you are linking LANs to larger systems, you must familiarize yourself with how the larger systems operate. Fletcher, for example, mastered the IBM 3270.

"Because I'm pulling things off the mainframe, I have to understand what the mainframe offers users and the type of interface it had," he says.

Fletcher says he wants to offer the same information on a PC, and "if users are used to working with an invoice number, I cannot suddenly call it a package number."

But, Fletcher adds, he does not need to be a mainframe expert.

"I don't have to know how to write mainframe code," he notes.

Bredin is a free-lance writer based in New York.

LAN administrators: You're not in Kansas anymore

LAN administrators are less tied to troubleshooting and are building more sophisticated skills such as network planning and design. It's hard to keep skills current, however, due to inadequate resources and time.

WHAT THEY DID TWO YEARS AGO	WHAT THEY DO TODAY
■ Verify backups on-line — at least a 30-minute process.	■ Verify backups via reports — a shorter process due to report generation.
■ Install new users.	■ Check E-mail notes from users who have had problems.
■ Expand LANs — planning where and what connections to make.	■ Check with network help desk about application and other user problems.
■ Add new applications to network. Maintain network.	■ Fix user problems.
■ Set up backups to run.	■ Capacity planning — increase the complexity of the network by adding sophisticated applications.
	■ Set up backups to run.

HOW THEY KEEP UP

- Use the application software as much as possible.
- Average 1 hour to 1 1/2 hours of LAN reading a night—about 20 periodicals a month.
- Get help from people in other departments who have attended conferences or seminars.
- Visit companies that have successfully finished similar projects.

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Duties	Keep the network running smoothly by troubleshooting, backing up, etc.

$40,000

Position	Network administrator with managerial responsibilities.
Duties	Project planning, systems analysis, limited staff management, assessment of future requirements.

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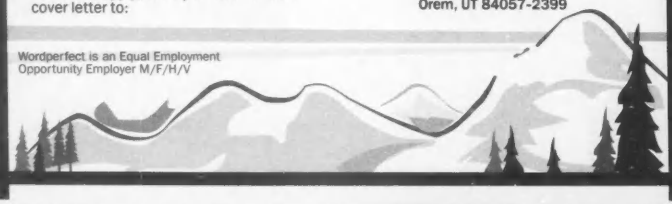

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Companies interested in receiving relevant bid documentation should send a letter of interest to be received at UNIDO not later than 18 June 1993, stating company background, year established, staffing and turnover, experience in handling similar contracts with name(s) of client(s) and briefly describing the nature of services provided, as well as curricula vitae of key staff.

All correspondence and/or enquiries should be addressed, in English, to:

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UNIDO
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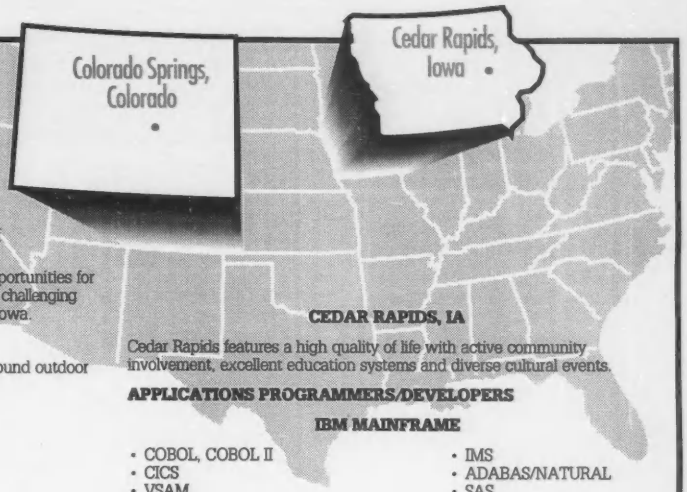

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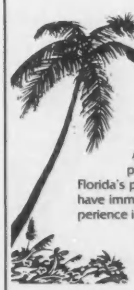

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Computerworld asked three computer executives to visit a computer superstore in their area and report on the store's value for the corporate buyer.

OVERALL IMPRESSIONS

Superstores have a lot to offer for the weekend computerphile, but reactions are mixed when it comes to their worth for the corporate buyer. Their best attributes are convenience, the chance to see products side by side and the opportunity for a reality check for prices.

Ed: "Unless you are lucky to find a mature salesperson with sufficient experience, the superstores are useful primarily for convenience value."

Doug: "It seems to have something for the computerphile in us all. The wide variety is good from a volume discount point of view. Buyers are almost faced with too many decisions."

Jon: "Clean-room mentality comes to mass marketing retail. The fact that you can eat off the floor at these places gives them a sense of professionalism. This is critical, especially at the IS level. It separates superstores from some of the PC boutiques."

REPORT CARD

How well do superstores meet corporate IS needs?

ED	B-
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PRODUCT SELECTION

Fair, but you can usually do better through other channels. Some narrow product lines are well-stocked.

Ed: "Brand-name products are well-represented; you can get everything from disks to Novell NetWare v3.11. However, selection is more limited than that of many mail-order operations. The selection of hardware is generally adequate for repairs such as system component purchases, and mainstream software products are in good supply."

Doug: "I was pleasantly surprised to see a well-stocked collection of almost every Macintosh model available, from the high schooler's Mac Classic to the screaming Quadra 950. There also was a good collection of printers and other peripherals available. During my visit, there were three product demonstrations, which gave me a taste of Ami Pro and a nibble of multimedia."

PRICES

Competitive but on the high side. Best buys are individual system components.

Doug: "The prices fell somewhere between retail and mail order, but I really didn't see any prices out of whack."

Ed: "System pricing seems to have become more competitive but is still slightly higher than normal IS channels. Components such as disk drives and memory are lower than the manufacturers' pricing — about 20% to 25% for disk drives. Software seems reasonably priced but is roughly 5% to 10% higher than the best mail-order and other corporate resellers. Even these differences can often be resolved because many stores have a 'meet the competition's price' strategy."

Jon: "Prices are very close to traditional resellers, especially for hardware, and some are even a few dollars less."

SALES STAFF EXPERIENCE

Many floor representatives are at the level of knowledgeable hobbyists. They know narrow product lines but lack real-world corporate computing experience.

Doug: "These weren't your typical, straight-out-of-high school salespeople. They seemed knowledgeable and eager to help. Most appeared to be between 20 and 30 years old and had a modicum of technical expertise."

Ed: "Corporate buyers must do their homework, because although the salespeople are generally knowledgeable on narrow product lines, they lack exposure to competitive products and business computing issues such as networking, host computing, system scalability and the reality of supporting large numbers of users in the workplace."

Jon: "I spoke with the store manager and inquired as to the mix of personnel. Yes, they had the usual suspects — power users, home enthusiasts and a smattering of Home Shopping Club refugees. But the real news is that the bits and bytes boys and girls were there in force — downsized, outsourced but still determined. I made a mental note to drop by the personnel office and pick up an application — just in case."

TECHNICAL SERVICE AND TRAINING

While it's difficult to determine this on a site visit, technical service seemed up to par. Well-rounded classes and seminars are also provided.

Doug: "CompUSA provides a training center with a variety of classes and a good selection of magazines and books. The training is offered in the typical levels from beginning to advanced."

Jon: "Each Computer City outlet has a fully equipped training center that caters to both the home and corporate user communities, at a price point that will impact the PC training industry."

Compiled by Jodie Naze, associate editor, features.

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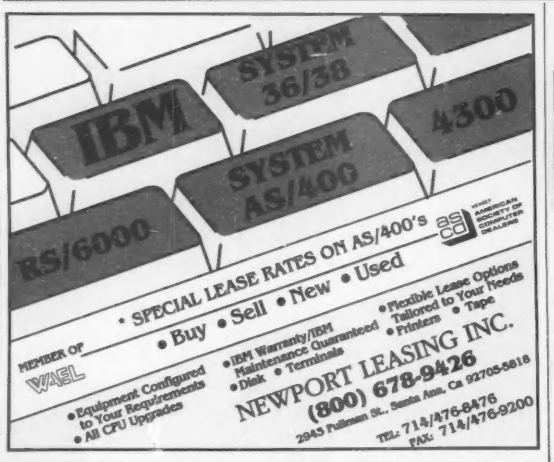

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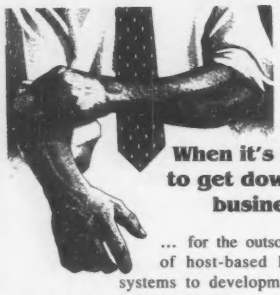

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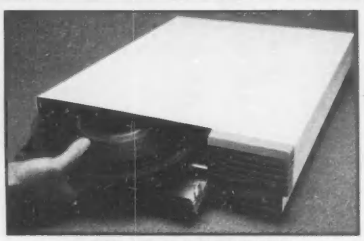

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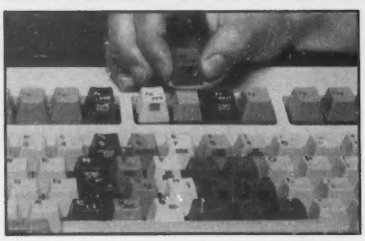

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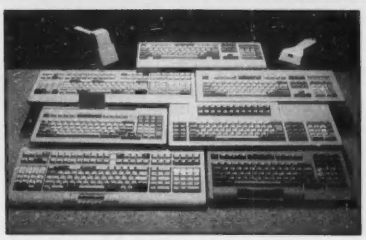

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Advanced Logic Research	35.7
Compression Labs Inc.	22.8
Digital Systems Int'l Inc.	22.2
Rasterops	21.9
Weitek (H)	19.7
Comshare Inc.	18.4
Centigram Communications	17.6
Cambex Corp.	16.0

Dollar

Intel Corp.	6.50
Zilog Inc. (H)	4.25
IBM	4.13
Centigram Communications	3.00
Motorola Inc. (H)	2.38
System Software Assoc.	2.38
Compression Labs Inc.	2.25
ITT Corp.	2.13

Losers

Percent

Dell Computer Corp.	-27.5
3 Com Corp. (H)	-27.3
Group I Software	-23.1
Knowledgeware Inc.	-13.7
Sequent Computer Sys.	-13.4
MathSoft	-13.2
Iomega Corp.	-12.5
State of the Art	-12.5

Dollar

3 Com Corp. (H)	-10.25
Dell Computer Corp.	-9.00
Wellfleet Communications (H)	-4.50
IMRS Software Inc.	-3.75
Novell Inc.	-3.63
Compuware Corp.	-3.25
Group I Software	-3.00
Sequent Computer Sys.	-3.00

Too good to last?

Valuations are currently very high for many technology stocks. Is the market due for a correction?

Curt Monash
President, Monash Information Services
"Almost every stupidly priced stock I can think of is overpriced. This suggests that a correction may well be coming up.

"Even the companies whose fundamentals are bulletproof are at amazingly high valuations. The slightest surprise can take the stocks down, like Novell, even though the companies are fundamentally solid.

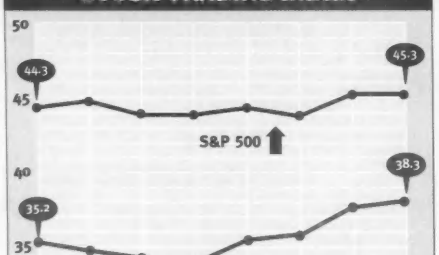
"The only way to make money right now, other than the greater fool theory, is to find names that have been overlooked. Intersolv is one that seems low to me."

Michael Murphy
Editor, "California Technology Stock Letter"
"I would separate technology stocks from the general market. You will probably see a correction in the general market — maybe not too drastic but lasting fairly long — while a lot of tech companies that have good news will just continue to grow.

"Anything related to PCs that can avoid price pressure will grow. Systems and disk drives have suffered from price pressure, but networking and PC component companies have avoided the pressure so far."

— Derek Slater

STOCK TRADING INDEX



Exch	52-Week Range			May 28 3 PM	Wk Net Change	Wk Pct Change
COMMUNICATIONS AND NETWORK SERVICES						Up 1.2%
OTC	39.13	9.63	3 COM Corp. (H)	27.25	-10.25	-27.3
NYS	80.25	61.38	American Info Techs Corp.	72.13	-0.63	-0.9
NYS	62.38	40.63	AT&T (H)	61.13	1.38	2.3
OTC	3.56	0.75	Artel Communication Corp.	2.81	-0.13	-4.3
OTC	24.50	10.25	Banyan Systems Inc.	16.13	0.88	5.7
NYS	56.75	42.88	Bell Atlantic Corp.	53.88	-0.25	-0.5
NYS	57.50	46.75	Bellsouth Corp.	51.88	-0.25	-0.5
NYS	6.25	3.63	Bolt, Beranek & Newman	5.00	0.38	8.1
OTC	18.50	9.50	Brooktrout Technology	12.00	0.63	5.5
NYS	104.50	44.00	Cabletron Systems (H)	101.25	1.63	1.6
OTC	20.00	3.75	Centigram Communications	20.00	3.00	17.6
OTC	41.00	17.75	Chipcom Corp. (H)	39.00	-0.50	-1.3
OTC	56.25	21.38	Cisco Systems Inc. (H)	53.00	-1.00	-1.9
OTC	18.75	5.50	Compression Labs Inc.	12.13	2.25	22.8
OTC	34.50	11.00	CrossComm (H)	34.00	0.75	2.3
OTC	4.63	0.88	Data Switch Corp.	3.13	-0.13	-3.8
NYS	22.13	12.38	Digital Comm. Assoc.	12.88	-0.13	-1.0
OTC	12.75	4.50	Digital Systems Int'l Inc.	5.50	1.00	22.2
OTC	44.00	4.25	DSC Communications (H)	43.00	1.75	4.2
OTC	9.50	4.75	Fibronix Int'l Inc.	6.38	-0.25	-3.8
OTC	26.00	8.75	Filenet Corp.	13.00	1.50	13.0
OTC	4.38	1.50	Gandalf Technologies Inc.	3.13	0.00	0.0
OTC	2.06	0.69	Gateway Communications	1.13	0.00	0.0
NYS	15.13	2.88	General Datacomm Inds. (H)	14.50	0.00	0.0
ASE	3.75	2.00	Go Video	2.44	0.13	5.4
NYS	37.75	30.63	GTE Corp.	35.13	-0.25	-0.7
NYS	84.25	62.50	ITT Corp.	83.50	2.13	2.6
OTC	52.75	29.88	MCI Commmunications Corp. (H)	52.00	0.88	1.7
OTC	14.25	2.25	Microcom Inc. (H)	4.63	-0.38	-7.5
OTC	24.25	4.75	Netrix Corp.	5.25	0.00	0.0
OTC	19.00	8.75	Network Computing Devices	11.00	-0.25	-2.2
NYS	15.00	5.38	Network Equipment Tech.	8.13	1.00	14.0
OTC	23.25	8.00	Network General	9.63	0.25	2.7
OTC	15.75	8.50	Network Systems Corp.	9.38	-0.25	-2.6
OTC	71.75	14.63	Newbridge Networks Corp. (H)	68.00	-0.38	-0.5
NYS	46.00	30.50	Northern Telecom Ltd.	35.38	-1.00	-2.7
OTC	35.25	22.50	Novell Inc.	27.63	-3.63	-11.6
NYS	92.50	75.63	Nynex Corp.	83.13	1.63	2.0
OTC	30.00	14.50	Octel Communications Corp.	22.00	0.50	2.3
OTC	6.13	3.38	Penril Data Comm Networks	4.38	0.00	0.0
OTC	38.75	10.25	Picturetel Corp.	20.00	-1.88	-8.6
OTC	15.25	4.63	Proteon Inc.	5.50	-0.13	-2.2
NYS	31.75	10.16	Scientific Atlanta Inc. (L)	31.75	-0.50	-1.6
NYS	40.75	29.69	Southwestern Bell Corp. (L)	38.13	0.50	1.3
NYS	33.25	21.00	Sprint Corp.	32.50	1.13	3.6
OTC	27.00	10.50	Standard Microsystems Corp	16.50	-0.25	-1.5
OTC	18.50	6.88	Stratacom Inc.	14.25	1.50	11.8
OTC	125.50	27.00	Synoptics Communications (H)	119.00	-1.13	-0.9
OTC	7.13	4.13	Telebit Corp. (H)	4.13	0.00	0.0
OTC	9.38	2.13	Telematics Int'l Inc.	6.75	0.63	10.2
OTC	25.50	13.38	US Robotics	23.75	-1.00	-4.0
NYS	43.00	32.88	U S West Inc. (L)	43.00	-0.13	-0.3
OTC	55.50	12.00	Wellfleet Communications (H)	47.75	-4.50	-8.6
OTC	13.00	7.00	Xircom	12.50	0.25	2.0
PCS AND WORKSTATIONS						Up 1.8%
OTC	6.75	2.50	Advanced Logic Research	4.75	1.25	35.7
OTC	65.25	41.50	Apple Computer Inc.	56.75	-0.75	-1.3
OTC	24.25	11.25	AST Research Inc.	16.50	1.00	6.5
NYS	12.50	3.50	Commodore Int'l	3.88	-0.25	-6.1
NYS	58.50	23.13	Compaq Computer Corp.	57.63	0.38	0.7
OTC	49.88	15.00	Dell Computer Corp.	23.75	-9.00	-27.5
NYS	85.00	50.25	Hewlett Packard Co.	83.50	-1.00	-1.2
NYS	16.50	16.13	Silicon Graphics (H)	36.00	-0.25	0.7
OTC	41.00	22.50	Sun Microsystems Inc.	30.13	0.25	0.8
NYS	32.13	22.25	Tandy Corp.	31.13	1.63	5.5
OTC	11.00	2.75	Zeos International Ltd.	4.25	0.25	6.3
LARGE SYSTEMS						Off 0.1%
ASE	18.38	4.63	Amdahl Corp.	5.50	0.25	4.8
NYS	9.75	4.25	Convex Computer	6.63	0.25	3.9
OTC	6.13	1.88	Cray Computer	2.75	-0.13	-4.3
NYS	32.88	19.00	Cray Research Inc.	29.13	0.13	0.4
NYS	13.88	7.13	Data General Corp.	11.38	0.88	8.3
NYS	49.25	30.38	Digital Equipment Corp.	44.00	-2.38	-5.1
NYS	38.63	26.75	Harris Corp.	35.50	0.00	0.0
NYS	100.38	45.88	IBM	52.88	4.13	8.5
OTC	22.00	5.50	Kendall Square Research	16.50	1.75	11.9
NYS	127.50	83.00	Matsushita Electronics	119.25	1.75	1.5
OTC	23.75	8.25	NetFrame	16.25	-1.00	-5.8
OTC	15.50	9.25	Parallan Computer	14.25	-0.25	-1.7
OTC	18.75	6.00	Pyramid Technology (H)	18.38	0.50	2.8
OTC	24.00	12.13	Sequent Computer Sys.	19.38	-3.00	-13.4
OTC	14.50	1.38	Sequoia Systems Inc.	2.00	-0.13	-5.9
NYS	48.38	29.50	Stratus Computer Inc.	34.38	-1.63	-4.5
NYS	16.88	9.88	Tandem Computers Inc.	12.88	0.00	0.0
OTC	19.00	10.63	TriCord Systems	16.50	-0.25	-1.5
NYS	13.88	7.75	Unisys Corp.	11.38	-0.13	-1.1
SOFTWARE						Up 0.4%
OTC	66.25	25.25	Adobe Systems Inc.	66.25	0.50	0.8
OTC	21.00	10.25	Aldus Corp.	15.75	0.13	0.8
OTC	14.25	5.50	American Software Inc.	8.00	1.00	14.3
OTC	28.13	9.75	Ask Computer Systems	11.50	-0.50	-4.2
OTC	56.50	32.75	Autodesk Inc.	49.50	-2.25	-4.3
OTC	13.00	2.50	Bachman Info. Systems	3.13	0.38	13.6
OTC	43.00	32.00	BGS Systems Inc. (L)	32.75	-1.00	-3.0
OTC	84.13	37.25	BMC Software Inc.	49.75	-3.75	-7.0
OTC	28.25	17.00	Boole & Babbage	23.25	2.00	9.4
OTC	76.50	17.50	Borland Int'l Inc. (H)	25.25	-0.63	-2.4
OTC	6.13	3.00	CE Software	3.25	-0.25	-7.1
ASE	30.25	6.25	Cheyenne Software Inc. (H)	27.25	-1.63	-5.6
OTC	19.50	8.25	ChipSoft	12.00	0.75	6.7
OTC	9.63	5.63	Cognos Inc.	6.50	0.00	0.0
NYS	31.38	10.88	Computer Associates (H)	28.13	-1.25	-4.3
NYS	12.38	2.75	Computervision Corp.	4.88	0.13	2.6
OTC	34.25	19.25	Compuware Corp.	23.75	-3.25	-12.0
OTC	14.75	5.75	Comshare Inc.	7.25	1.13	18.4
OTC	17.25	10.75	Corel Corp.	15.25	0.25	1.7
OTC	8.00	5.25	Easel Corp. (L)	6.38	0.63	10.9
OTC	25.25	12.00	4th Dimension	20.25	0.50	2.5
OTC	19.50	6.00	Frame Technology	7.00	-0.38	-5.1
OTC	20.75	10.00	Group I Software	10.00	-3.00	-23.1
OTC	35.25	19.75	Gupta	19.75	1.75	9.7
OTC	8.75	3.50	Hogan Systems Inc.	7.88	0.13	1.6
OTC	25.75	11.25	IMRS	18.50	0.50	2.8
OTC	34.75	18.50	Information Resources	34.63	0.63	1.8
OTC	49.75	12.13	Informix Corp. (H)	43.13	-2.38	-5.2
OTC	16.75	9.50	Intergraph Corp.	9.88	0.00	0.0

Exch	52-Week Range			May 28 3 PM	Wk Net Change	Wk Pct Change
OTC	13.63	6.88	Interleaf Inc.	9.13	0.25	2.8
OTC	18.00	6.75	Intersolv Inc.	7.25	-0.50	-6.5
OTC	16.00	7.75	Knowledgeware Inc.	10.25	-1.63	-13.7
OTC	54.75	26.00	Legent Corp.	29.00	0.75	2.7
OTC	36.75	14.75	Lotus Development (H)	34.50	0.25	0.7
OTC	23.00	7.75	MathSoft	8.25	-1.25	-13.2
OTC	23.25	5.25	McAfee Associates	6.75	-0.25	-3.6
OTC	11.63	1.88	Meca Software	10.25	-0.75	-6.8
OTC	15.00	5.25	Mentor Graphics	11.25	0.88	8.4
OTC	46.00	27.25	Micro Focus	34.88	-0.50	-1.4
OTC	19.00	4.38	Micrografx Inc.	6.38	0.63	10.9
OTC	95.25	65.50	Microsoft Corp. (H)	92.25	-0.25	-0.3
OTC	43.63	14.00	Oracle Corp. (H)	42.00	0.13	0.3
OTC	63.75	25.25	Parametric Technology (H)	33.00	0.25	0.8
OTC	40.50	22.50	Peoplesoft	32.75	1.50	4.8
OTC	8.13	3.50	Phoenix Technologies	5.00	0.38	8.1
OTC	40.00	25.38	Powersoft	27.00	-1.50	-5.3
OTC	41.50	17.00	Platinum Software	27.50	1.50	5.8
OTC	25.00	11.25	Platinum Technology	15.00	0.25	1.7
OTC	61.50	29.00	Progress Software Corp.	39.00	0.75	2.0
OTC	15.50	2.56	Quarterdeck Office Sys. (L)	3.31	0.25	8.2
OTC	24.50	11.75	Rainbow Technologies Inc.	22.25	-1.75	-7.3
OTC	15.75	4.00	Rasterops	8.69	1.56	21.9
OTC	15.25	3.63	Ross Systems	11.50	0.00	0.0
OTC	27.25	8.50	Sapiens Intl. Corp. N.V.	20.50	-2.50	-10.9
OTC	15.00	6.75	Software Publishing Corp.	7.50	-0.13	-1.6
OTC	11.00	2.00	Software Toolworks Inc. (H)	10.88	0.13	1.2
OTC	4.50	0.75	Spinnaker Software	1.31	-0.13	-8.7
OTC	12.75	3.25	State of the Art	8.75	-1.25	-12.5
NYS	24.63	13.75	Sterling Software Inc.	19.50	0.38	2.0
OTC	19.75	8.00	Struct. Dynamics Research (H)	19.63	0.63	3.3
OTC	69.25	21.00	Sybase Inc.	69.25	-1.88	-2.6
OTC	44.25	5.88	Symantec Corp.	16.75	0.25	1.5
NYS	12.50	5.25	Systems Center Inc.	10.50	0.50	5.0
OTC	25.50	10.00	System Software Assoc.	18.63	2.38	14.6
OTC	7.00	2.50	Trinzic Corp.	3.63	0.25	7.4
OTC	22.75	9.13	ViewLogic Systems	19.75	1.50	8.2
OTC	23.50	6.75	Walker Interactive Systems	7.25	-0.25	-3.3
OTC	3.19	1.38	Wordstar	1.75	-0.19	-9.7
SEMICONDUCTORS						Up 3.8%
NYS	32.88	7.38	Advanced Micro Devices	28.13	-0.50	-1.7
NYS	21.38	9.00	Analog Devices Inc.	20.00	1.00	5.3
OTC	23.88	7.63	Atmel Corp. (H)	23.25	-0.38	-1.6
OTC	8.75	2.75	Chips and Technologies	3.88	0.38	10.7
OTC	39.75	13.00	Cirrus Logic	17.13	0.13	0.7
NYS	16.88	7.38	Cypress Semiconductor Corp(H)	13.38	0.63	4.9
NYS	16.13	8.00	Dallas Semiconductor	15.00	0.50	3.4
OTC	121.25	47.75	Intel Corp.	110.50	6.50	6.3
NYS	14.13	4.88	LSI Logic Corp.	13.00	0.50	4.0
OTC	33.25	13.75	Lattice Semiconductor	29.25	-0.75	-2.5
NYS	29.75	13.13	Micron Technology (H)	29.75	1.50	5.3
NYS	80.63	37.13	Motorola Inc. (H)	80.63	2.38	3.0
NYS	15.00	8.50	National Semiconductor	14.50	0.13	0.9
OTC	18.00	6.50	Sierra Semiconductor	8.50	0.25	3.0
OTC	42.25	22.25	SynOpsys (H)	40.13	0.13	0.3
NYS	66.00	32.25	Texas Instruments (H)	64.75	-0.13	-0.2
OTC	8.88	6.00	VLSI Technology	7.88	0.38	5.0
OTC	9.13	2.13	Weitek (H)	9.13	1.50	19.7
ASE	9.63	4.13	Western Digital Corp.	5.00	0.00	0.0
OTC	38.50	14.50	Xilinx (H)	36.00	-0.75	-2.0
OTC	31.25	12.66	Zilog Inc. (H)	31.25	4.25	15.7
PERIPHERALS AND SUBSYSTEMS						Off 2.6%
OTC	38.75	11.75	American Power Conversion (H)	35.50	-1.75	-4.7
OTC	20.16	13.84	Banctec Inc.	18.50	0.50	2.8
OTC	18.00	6.25	Cambex Corp.	7.25	1.00	16.0
ASE	18.38	6.50	Cognitronics Corp.	7.13	0.00	0.0
NYS	25.50	11.88	Conner Peripherals	11.88	-1.63	-12.0
OTC	38.50	10.75	Creative Technologies Inc.	31.75	-2.50	-7.3
OTC	30.75	14.25	Data Race Inc.	22.00	-2.63	-10.7
ASE	17.00	4.75	Databam Corp.	10.38	0.75	7.8
NYS	37.00	10.09	EMC Corp. (H)	34.00	-0.25	-0.7
OTC	10.50	5.38	Emulex Corp.	7.00	-0.25	-3.4
OTC	19.00	13.25	Evans & Sutherland	16.75	-0.50	-2.9
OTC	33.00	12.00	Exabyte	13.00	0.25	2.0
OTC	26.00	7.09	Intelligent Info. Systems	21.25	0.50	2.4
OTC	8.88	3.88	Iomega Corp.	4.38	-0.63	-12.5
OTC	34.75	5.75	IPL Systems Inc. (H)	7.50	-0.75	-9.1
OTC	24.00	10.75	Komag Inc.	19.00	-2.25	-10.6
OTC	19.63	5.88	Maxtor Corp.	7.13	-0.63	-8.1
OTC	12.63	7.13	Micropolis Corp. (H)	7.25	-0.25	-3.3
NYS	116.00	93.75	3M Corp	113.13	-1.75	-1.5
OTC	7.75	4.00	Printronix Inc.	6.88	0.13	1.9
NYS	17.25	6.88	QMS Inc.	14.75	-1.00	-6.3
OTC	17.88	11.63	Quantum Corp.	12.50	-1.00	-7.4
OTC	17.75	3.38	Radius Inc.	3.50	-0.25	-6.7
NYS	16.50	7.50	Recognition Equipment (H)	15.25	0.25	1.7
OTC	13.88	4.50	Rexon Inc.	5.00	0.50	11.1
OTC	22.38	12.00	Seagate Technology	16.25	-0.75	-4.4
NYS	45.00	18.00	Storage Technology (H)	38.63	-1.63	-4.0
NYS	27.88	16.88	Tektronix Inc.	22.25	-2.00	-8.2
NYS	88.88	66.75	Xerox Corp.	75.75	2.00	2.7
SERVICES						Up 1.4%
OTC	23.75	14.25	American Mgmt. Systems	18.88	0.00	0.0
NYS	4.75	2.75	Anacomp Inc. (L)	3.00	0.00	0.0
OTC	35.75	16.25	Analysts Int'l	26.75	-0.50	-1.8
NYS	54.13	38.75	Auto Data Processing	48.63	-1.00	-2.0
NYS	17.25	11.22	Ceridian Corp.	14.75	-0.13	-0.8
NYS	17.38	13.13	Comdisco Inc.	14.38	0.13	0.9
OTC	8.25	4.50	Computer Horizons	7.50	0.25	3.4
NYS	80.50	57.00	Computer Sciences	75.13	1.13	1.5
NYS	9.25	6.50	Computer Task Group	7.13	0.25	3.6
NYS	40.50	22.00	CompuUSA Inc.	33.38	0.88	2.7
OTC	14.75	6.00	Corporate Software	12.25	0.00	0.0
OTC	22.50	7.38	Egghead Discount Software	8.50	-0.50	-5.6
NYS	51.88	25.25	General Motors E (EDS)	31.75	1.25	4.1
OTC	25.50	9.25	Inacom Corp.	17.75	-0.13	-0.7
OTC	15.38	6.25	Intelligent Electronics	13.75	-0.25	-1.8
OTC	13.00	6.63	Merisel	12.50	0.13	1.0
OTC	16.00	5.75	Microdyne Inc. (H)	15.75	1.75	12.5
NYS	43.00	21.75	Paychex	40.25	1.00	2.5
NYS	87.25	32.88	Policy Management Sys. (L)	34.88	-2.88	-7.6
NYS	38.00	16.81	Reynolds and Reynolds	37.13	0.63	1.7
OTC	32.75	22.00	SEI Corp.	32.25	0.50	1.6
OTC	24.38	16.88	Shared Medical Systems	22.13	1.00	4.7
OTC	13.75	5.75	SHL Systemhouse	11.88	0.50	4.4
OTC	29.25	18.25	Software Spectrum Inc.	27.00	1.75	6.9
OTC	32.25	20.75	Sungard Data Systems (L)	29.38	0.00	0.0
NYS	4.38	1.13	Ultimate Corp.	4.00	-0.13	-3.0

KEY: (H) = New annual high reached in period (L) = New annual low reached in period
Note: Southwestern Bell Corp had a 2-for-1 split on 5/25/93.
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In Brief

Novell grows

Novell, Inc. fiscal second-quarter net income jumped 31% to $80 million, buoyed by initial sales of NetWare 4.0, upgrade products and rising royalty revenue. Revenue in the quarter leaped 25% to $225 million, the Provo, Utah, firm said. For the first half, Novell earned $151 million on sales of $430 million, an increase of 33% and 26%, respectively, from the same period last year.

SSA results up

Financial application software developer **System Software Associates, Inc.** (SSA) posted fiscal second-quarter profits of $6 million, a 20% increase from the year-earlier period. Revenue in the period grew 27% to $62.9 million, the Chicago-based company said. For the first half, the company earned $6.9 million, on revenue of $111.5 million.

Executive shuffle

IBM has hired Abby Kohnstamm as its first vice president of corporate marketing. Kohnstamm joins IBM from **American Express Co.** where she was a senior vice president. Meanwhile, Lucie J. Fjeldstad, IBM's general manager of multimedia, will retire today after 25 years of service.

SHORT TAKES **Legent Corp.** in Vienna, Va., has acquired Cleveland-based **National DataGuard Technologies, Inc.** and its Lifeguard automated disaster recovery software for corporate data centers. ... **Hewlett-Packard Co.** has agreed to acquire **Metrix Network Systems, Inc.**, a Nashua, N.H., network monitoring and analysis vendor. ... **Starlight Networks**, a developer of multimedia network software management, has received $5 million in third-round venture financing from a group of European investors.

Dell cites notebooks for profit drop

By Kim S. Nash
AUSTIN, TEXAS

■ Dell Computer Corp. blamed a weak notebook computer line last week for most of a 49% profit plunge in its fiscal first quarter. But a lingering PC price war — although not as fierce as it was at this time last year — has taken a bite out of Dell's earnings as well, analysts said.

Make no mistake: The 9-year-old company is not about to wither, analysts agreed, noting that Dell set record sales for the quarter ended May 2 of $672.4 million, up 84% over the same period a year ago (see chart).

However, the lack of a competitive notebook means Dell has missed out on a fast-rising demand for portable computers from both home and business buyers during the past several months, said Matt Cain, a program director at Meta Group, Inc. in Stamford, Conn. "Dell's portables are underpowered and pretty expensive" compared with offerings from rivals, Cain said.

Delays annoy users

Moreover, Dell has disappointed would-be customers with continued delays in getting an I486-based notebook into the multiple distribution channels the company uses. Meanwhile, Compaq Computer Corp., Toshiba Corp. and Texas Instruments, Inc., among others, are preparing 486-based laptops for imminent release [CW, May 24].

As Cain put it: "A situation like that means you're going to get hurt."

Chairman and Chief Executive Officer Michael Dell agreed. Despite the recent hiring of John Medica, a key figure from Apple Computer, Inc.'s PowerBook group, profits for the next two quarters will take a hit as Dell pauses to rethink its laptop strategy, Dell said in a prepared statement.

The company has tried to escape painful price skirmishes on other PC fronts by enlisting warehouse outlets such as Wal-Mart Stores, Inc. and Price Club. "The big guys" such as IBM and Compaq are not moving products through such outlets right now, so Dell may have some breathing room, said Van Baker, service director of distribution channel strategies at Computer Intelligence/Infocorp in Santa Clara, Calif.

"Dell is trying to re-create the scene when they dominated superstores before seeing competitors come in," Baker explained. He said Dell sales were squeezed after IBM, Compaq and Apple decided to sell PC lines through computer superstores, such as Bizmart, Inc. and Computerland, Inc.

Falling share

For example, during the first three months of this year, Dell's share in terms of PC units sold at all levels via the superstore channel has steadily dropped from 18.9% in January to 16.6% in February to 13.8% in March, according to Baker.

"Now they want to find channels where they don't yet have those competitors to deal with," he said.

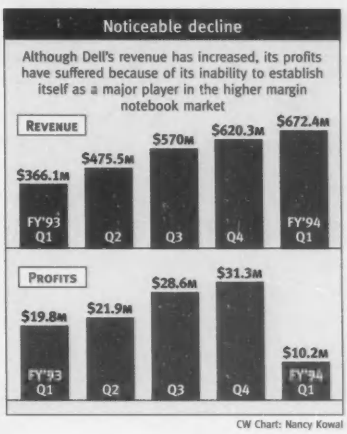
Yet, observers see no end to the PC wars, saying that prices will continue to fall. For example, buyers can get various configurations of 386- and 486-based PCs for 20% to 30% less than they could at this time in 1992, according to John Murphy, editor and publisher of "The PC Street Price Index" newsletter in Gibbsboro, N.J.

"As long as there are more than 10 vendors making PCs and three vendors making chips, the wars will go on and on and on," Murphy said.

The market has seen little pricing stability, with PC makers forced to slash price tags at least every three months to stay on par, he added.

However, the ferocity of the battle has begun to ebb, according to Cain. "You don't see the angry back-and-forth of a year or 18 months ago."

Vendors have begun to wage feature contests, he said. Today's deluxe PC comes with more glitz than its forebears, such as multimedia add-ons. Better meat-and-potatoes features, such as faster I/O, higher capacity disk drives and additional warranties, are also on the table, Cain noted. "It's not so much dollars now, but more of a give-back to users in terms of functionality," he said.



CW Chart: Nancy Kowal

AST Research to buy Tandy's PC business

By Stephen P. Klett Jr.
IRVINE, CALIF.

AST Research, Inc. last week said it plans to purchase the bulk of Tandy Corp.'s PC manufacturing operations for roughly $175 million.

Tandy said the transaction would include the sale of its laptop/portable subsidiary Grid Systems Corp., Tandy-Grid Europe and manufacturing plants in Texas and Scotland.

Tandy/Grid's share of U.S. PC shipments in 1992 was roughly 3.4%, while AST garnered 2.8%, according to Framingham, Mass.-based International Data Corp. Combined, AST and Tandy shipped 190,000 units in the first quarter of this year, which would make AST the fourth-largest PC player behind IBM, Compaq Computer Corp. and Apple Computer, Inc., IDC analyst Ted Julian said.

While details of the deal were sketchy, the impending transaction comes down to a couple of key points: Tandy wants out of PC manufacturing so it can focus on retailing, while AST is seeking to boost manufacturing capacity.

AST "is buying the ability to manufacture Grid [products]," Julian noted.

While AST would now manufacture all Grid products and sell the Grid line under its name worldwide, Tandy is expected to retain the rights to sell the Grid line under its own name in the U.S., Julian said.

Bill Lempesis, president of Lempesis Research in Pleasanton, Calif., concurred. "If Tandy is out of the PC manufacturing business, it doesn't mean it is out of the PC reselling business," he said, referring to the possibility of Tandy selling AST machines. "Tandy can probably move more AST equipment than its own."

An AST spokesman declined to comment on the company's plans for the Grid product line, saying there were too many details that still needed to be worked out. "Our intent is pretty simple — our goal is to expand market share," he said.

Tandy officials did not return calls by press time. However, earlier this year Tandy said it would spin off its manufacturing operations into a separate company.

Final approval of the deal is subject to the drafting and approval of a definitive purchase agreement by each company's board of directors and regulatory approvals. Subject to these constraints, AST said it expects the transaction to be completed in July.

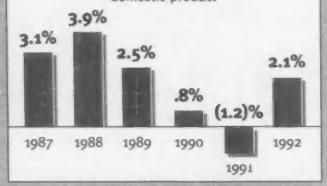
INDUSTRY PULSE: Leasing industry

U.S. computer leasing volume (in billions)

Source: Computer Dealers and Lessors Association, Washington, D.C.

U.S. economic growth

Measured by percent change in gross domestic product



Source: U.S. Bureau of Economic Analysis, Washington, D.C.

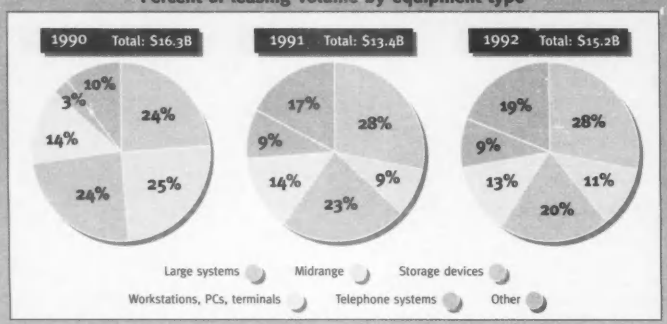
Top 5 leasing issues

Based on surveys of 330 leasing companies that buy, sell and lease new and used computer equipment

1. IBM, IBM Credit Corp. practices
2. Product life
3. The economy
4. Competition
5. Funds availability

Source: Gartner Group, Inc., Stamford, Conn.

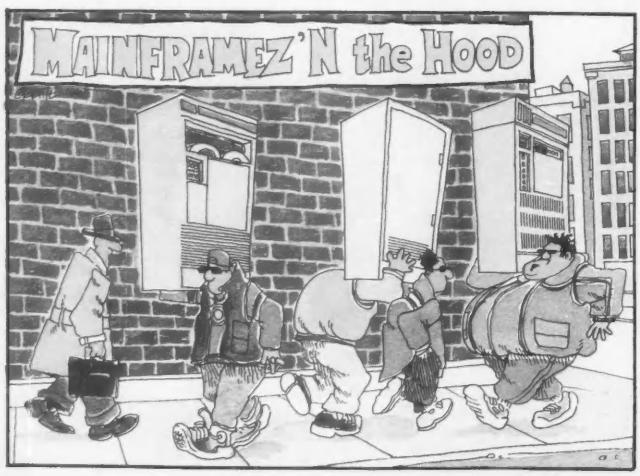
Percent of leasing volume by equipment type



Source: Computer Dealers and Lessors Association, Washington, D.C.

CW Chart: Michael Siggins

The Fifth Wave *by* Rich Tennant



Inside Lines

Heated Object-ions

In a heated exchange at a Comdex/Spring '93 panel, Microsoft Vice President Mike Maples bristled at a statement made by Lotus Vice President John Landry, who said Microsoft is the only operating system vendor not working with the Object Management Group to develop common object-oriented standards. Landry: "Everyone is working with OMG except Microsoft." Maples: "We're on the same footing as the other operating system vendors. But it's a function of when the standards are available. We're not going to wait for committees and meetings to deliver something."

It'll cost ya

Customers said IBM is tweaking the PS/2 line's software bundles. Currently, high-end PS/2s such as the Model 95 ship with OS/2 2.0. IBM will soon ship those systems with DOS and Windows for $50 more. IBM is also supposed to release models with OS/2 2.1 on them, one customer said.

Unprevent-a-bull

The French government is moving more aggressively to divest itself of state-controlled companies such as Compagnie des Machines Bull, which it hopes to sell within the next 18 months to two years, according to Axel Leblois, head of the money-losing company's U.S. operations. Although Bull has been on the so-called privitization list since 1986, political pressure has recently increased to get the government out from under money-sapping operations such as Bull, carmaker Renault and several aerospace, insurance and steel firms, Leblois said. The government has said it wants to sell most, if not all, of its 72% stake to shareholders IBM and NEC. But IBM, for one, "is going through so much turmoil of its own right now — I just don't know," Leblois said. IBM owns 5.7% and NEC owns 4.7% of Bull, which lost about $114 million on sales of $5.7 billion last year.

Freedom writer

DEC will be announcing changes to its software licensing practices next week at the Digital Equipment Computer Users Society Symposium, according to sources. Multiuser licensing will be extended to include VAXstations, and personal use licenses will be transferable across VAX and Alpha platforms, they said.

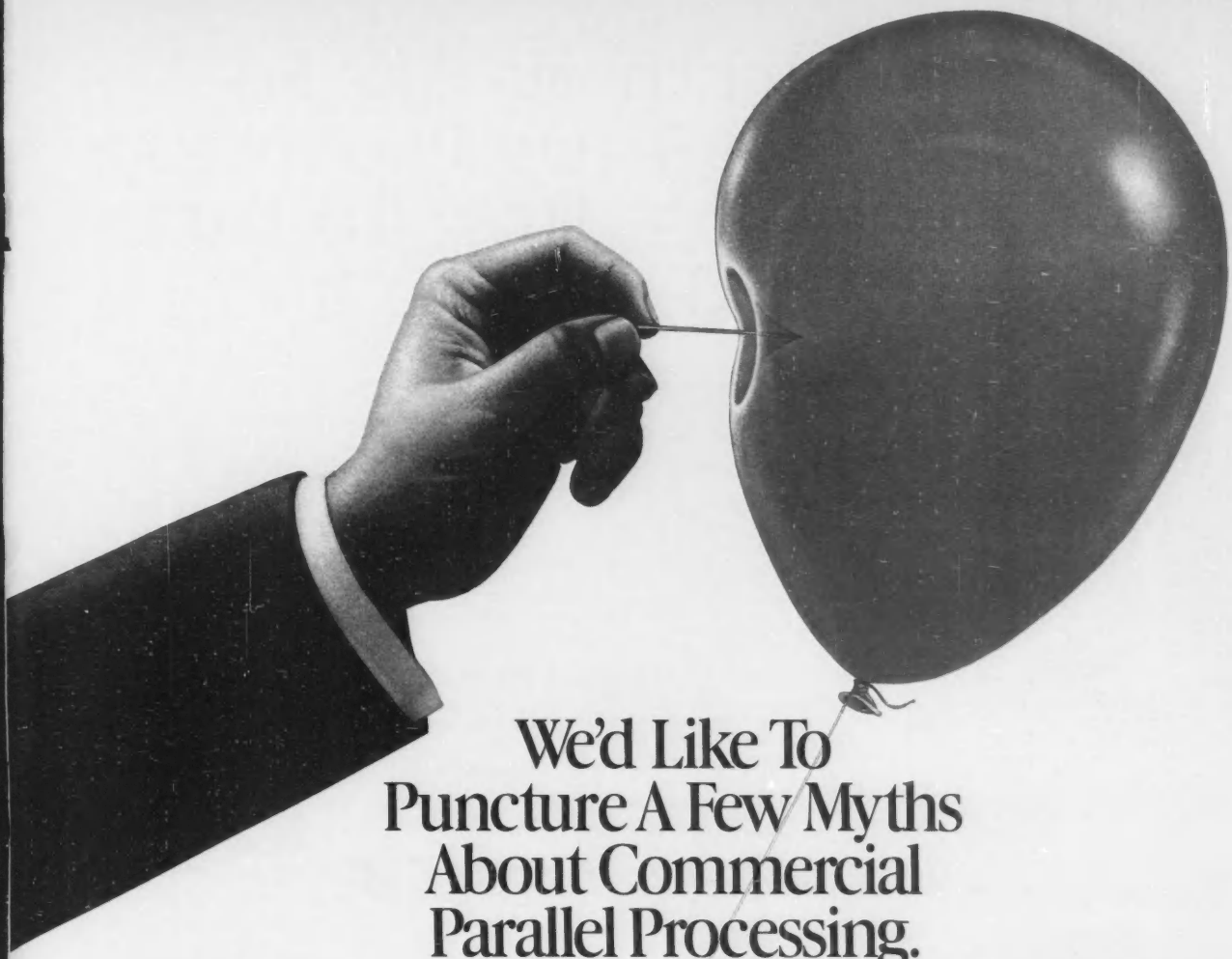
Quick! What's a six-letter word for . . .

Just when you were getting used to the term "middleware," you may have to figure out a substitute. TechGnosis, Inc., a software vendor, said it has been granted a registered trademark for the word from the U.S. Patent and Trademark Office in recognition of the company's "early use" of the term.

Blind faith

Last week's NextWorld Expo got off to a cacophonous start. First, there was a static-filled sound system during the early portion of Steve Jobs' keynote. Then, hundreds of attendees who couldn't get into the overflow hall to hear him talk began hammering on the doors and chanting so loudly that Jobs stopped in mid-sentence. The rambunctious Next devotees soon streamed in and filled every square centimeter of the aisles. A local fire department spokesman said they would launch an investigation to find out who was responsible for packing the crowd in hallways outside the exits and then letting the overflow jam the aisles.

A New Jersey consulting firm that just embarked on an office-wide trial of various wireless technologies has some key advice for those who may follow its lead: You can't nuke your popcorn and use your portable/cellular phones at the same time. If your phone closet is near your microwave oven, the popcorn will keep on popping while phone users will get blown away by static because the microwave and phones operate at close to the same frequency, cautioned Danny Briere, president of TeleChoice, Inc. Phone, fax or CompuServe News Editor Alan Alper with news tips at (800) 343-6474, (508) 875-8931 or 76537,2413, respectively. Or try Computerworld's *24-hour voice-mail tip line at (508) 820-8555.*



We'd Like To Puncture A Few Myths About Commercial Parallel Processing.

MYTH #1 Parallel processing is a promising technology, but not yet a deliverable business solution.

FACT Some of the world's most successful companies have been using our parallel processing systems to extend their business leadership.

Commercial parallel processing is the natural successor to today's mainframe applications. We've been perfecting and delivering the technology for almost ten years. Helping hundreds of customers around the world tap multi-million dollar profits formerly hidden in their enterprise.

Our systems help our customers process far more information than conventional mainframes can handle. This new information has given them a far better understanding of *their* customers and their markets. Some have used it to fundamentally redesign their operations, resulting in hundreds of millions of dollars in increased revenues.

MYTH #2 Parallel processing has no practical commercial applications that mainframes can't handle.

FACT Conventional mainframes don't have the power to extract the information you need to succeed from the sea of data your enterprise produces.

Your enterprise generates an enormous amount of data every day. Yet without a way to turn that data into actionable information, your enterprise may quickly lose share to more aggressive, better informed competitors. The NCR System 3600 and DBC/1012 can help you get the information you need to survive and succeed. Using hundreds of microprocessors working together to accomplish in minutes tasks that would take a conventional mainframe many hours to process serially. Assuming that today's mainframes could do the work in the first place.

Our machines are easily scalable, so you can put the power you need where you need it. And they're designed to cooperate with your legacy systems, extending your current IS investment.

MYTH #3 Commercial parallel processing needs Ph.D.s to run it.

FACT Your current programmers can write relational database applications for our machines the way they've always written them.

Our system software makes the task of programming for parallelism transparent to your IS staff. So there's no applications bottleneck or expense associated with retraining. You can start realizing the benefits of greatly increased processing power quickly.

MYTH #4 Commercial parallel processing is too expensive.

FACT Because our systems are based on hundreds of relatively inexpensive, industry-standard microprocessors, we can price them very affordably.

Our parallel processing systems are very competitively priced. And when you consider the value of obtaining mission-critical information you can't get any other way, your potential ROI is exceptional.

For more information, phone 1 800 CALL-NCR. We're delivering commercial parallel processing solutions that far out-perform anything the competition has to offer. And that's no myth.

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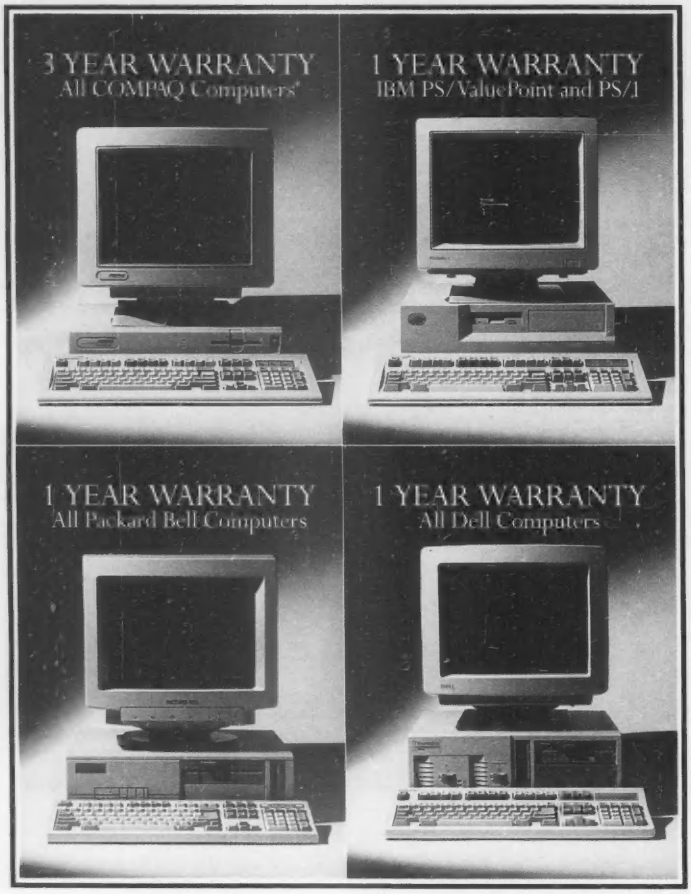
Our Competitors Are So Confident Of Their Products, They Guarantee Them To Last A Third As Long As Ours.

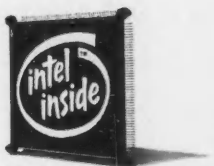


There's a common misconception today that computers are all alike. That they're made from the same components. That a box is a box is a box.

Well, here at Compaq, we have over 9,000 employees who could tell you why all PCs are not the same.

That there are important differences in quality. And reliability. And compatibility.

That, in the end, COMPAQ computers are designed to help you get more done with fewer problems.



The COMPAQ ProLinea, and all our affordable computers, feature high-performance processors from Intel.

But we also know that this could sound like an empty advertising promise if we didn't back it up. So we do.

Because unlike others who charge for extended coverage, all of our affordably priced PCs include a 3 year warranty with one year of on-site service.** Free.

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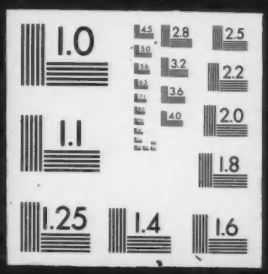
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